

THE INDUSTRY'S RECOGNIZED AUTHORITY

# ROCK PRODUCTS

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

Rock Products Industries  
to Set New Records

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World's Largest Cement  
Plant Boosts Capacity

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Increasing Uses for  
Expanded Shale Aggregate

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Cement Manufacturers Plan  
Record Expenditures

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Bessman plant of Pennsylvania Glass Sand Co., near Newport, N.Y.

JANUARY 1955

# 1 Crusher that does the work of 2 or more!



## WILLIAMS HEAVY DUTY Hammer Mills

One Williams Hammer Mill will do your complete crushing job in a single operation—reduce production costs as much as half—save up to 75% of initial equipment expense.

- ✓ No primary or secondary crushers required.
- ✓ Eliminates extra drives, conveyors and other equipment, foundations and housings for additional machines.
- ✓ Cuts manpower, downtime, maintenance, parts replacement, power requirements and other operating costs.

*There's A Williams Hammer Mill That Fits YOUR Needs Exactly*

**SUPER-SLUGGER** . . . Crushes stone as big as a 2½-yard dipper can handle, and reduces them to 1½", ¾", or down to agricultural limestone, in one operation! Up to 550 ton hourly capacity.

**SLUGGER** . . . Makes 1½", ¾", or agstone from 10' stone in one operation! Output up to 100 tons hourly.

**NF & GA MODELS** . . . Reduces 4" to 6" stone to any size from ¼" to 20 mesh. Capacity up to 200 tons hourly.

*Send For Catalog Today*

### WILLIAMS PATENT CRUSHER & PULVERIZER CO.

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# WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD



# Here's a chain designed specifically for abrasive elevator-conveyor service



Ideal for elevating and conveying under severely abrasive conditions, Link-Belt Class 800 Ley bushed chain is used on a bucket elevator with 16" x 8" cast buckets.

## It's long-life LINK-BELT Ley bushed chain that assures less downtime

If you're handling abrasive materials, you'll appreciate the extra wear Link-Belt builds into its Ley bushed chain. The barrels of this rugged cast chain have renewable hardened steel bushings in which steel pins ride. For extraordinarily severe service, manganese steel bushings and alloy steel pins can be furnished.

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No ONE chain serves every purpose—get the RIGHT one from LINK-BELT's complete line



LXS chains are made to close tolerances from carefully selected steels. Ideal for rugged drive and conveyor service.



Class C combination chain—popular, durable, low-cost design for elevators and conveyors.



Class 55 bushed roller chain with straight side-bars—for practically any conveyor or elevator.



Link-Belt "Flint-Rim" cast sprockets give extra long life. Cast steel sprockets for most severe service.

**LINK-BELT**

13-514

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# ROCK PRODUCTS

## January 1955

### This Month

**What's Happening**

**Editorial—Problems Facing the Industries as They Supply**

**Enlarged Demands**

**Rocky's Notes—A Bright Future for Silica-Silicones**

**Labor Relations Trends**

**People in the News**

**Industry News**

**Hints and Helps**

**New Machinery**

**Rock Products Industries to Set New Production**

**Records in 1955**

Highways, commercial and home building to set pace for \$9 billion overall construction program. Producers contemplate installations to increase capacity, improve quality and extend markets      *Bron Nordberg*

**Crushed Stone Producers Look for Better Year**

Seventy-nine percent of producers anticipate increase in volume of business

**Technical Advances of Industry Revealed in a**

**Year of Travel**

Aggregates plants emphasizing more processing equipment for quality improvement and additional sizes to meet exacting specifications      *Walter B. Lenhart*

**Prospective Chemistry on Cement and Concrete**

Part XI. A bit on the chemistry of the element Silicon      *Nathan C. Rockwood*

**World's Largest Cement Plant Boosts Capacity Again**

Clinker storage and belt conveyor handling system, electrical dust control in clinker grinding department among distinctive features. Plant has 24 kilns with waste heat boilers. Additional kilns and improvements planned for 12 million barrel capacity

*Bron Nordberg*

**Post-war Research by the National Lime Association**

*Robert S. Beynton*

**Expanded Shale—Many and Varied Uses Increasing Volume**

*S. Carl Smithwick*

**Cement Manufacturers Plan All-Time Record Expenditures for Expansion**

Year-end announcements indicate much greater plant building activity than summarized in this forecast

**CONCRETE PRODUCTS—**

**Business Conditions Analyzed by Southeastern Masonry Producers**

New architectural treatments, masonry cements, precast structural concrete, technical developments highlight St. Petersburg, Fla. meeting

**Promotion Material that Sells Concrete Products**

*Hubert C. Persons*

**Concrete Masonry Industry Stressing Development of New Markets**

**Many New Plants Entering Ready Mix Industry Program**

**National Concrete Masonry Association Convention Preventive Maintenance in the Ready Mixed Concrete Industry**

*Jos. A. Michelson*



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**Germany**—Georg J. Linder, Wittensbacher Allee 60, Frankfurt Am Main.

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RESEARCH KEEPS

# B.F. Goodrich

FIRST IN RUBBER



## Saving \$200 an hour

*A typical example of B. F. Goodrich improvement in rubber*

THAT'S what it would cost, \$200 an hour, to keep that ocean-going freighter tied up at dock. Three thousand tons of iron ore from foreign ports are dumped onto that moving rubber belt every hour. Ship-to-shore unloading dock takes a belt half a mile long. It has to lift those 3000 tons 80 feet up into the air.

Engineers knew that ordinary belts, of rubber-covered cotton fabric, could never stand the strain of lifting such heavy loads so high. Stop to repair a belt, and the \$200-an-hour waste would go on.

B. F. Goodrich engineers went to

work on the problem and developed the belt in the picture—steel cords instead of cotton fabric. Rubber for flexibility, for carrying, and for resisting wear; steel for strength. This belt can unload a ship in a few hours, without the danger of breakdown.

Today, this improved belt is at work in dozens of other places, too, where the load is heavy, the climb is steep. In fact, the first steel cord belt B. F. Goodrich ever made is still going strong after 6 years and 9 million tons of iron ore.

B. F. Goodrich has a never-ending

program of improvement which results in such products that stand harder use, last longer, and so cost far less in terms of useful life. Don't be too sure the service you are getting from belting, hose, tank linings or any rubber product is all you can expect until you learn what B. F. Goodrich has done recently to improve the products you use. Call in your B. F. Goodrich distributor or write *The B. F. Goodrich Co., Dept. M-349, Akron 18, Ohio.*

**B.F. Goodrich**  
INDUSTRIAL PRODUCTS  
DIVISION

## CARBIDE INSERT? or MULTI-USE?



**LOCATION:** New York-Buffalo Thruway, West Nyack, N. Y.

**OPERATING CONDITIONS:** Drilling 36' lift holes through trap rock and granite gneiss.

### Geo. M. Brewster & Son, Inc., Bogota, New Jersey, pushes deep-hole drilling costs down with TIMKEN® carbide insert bits

**W**AGON-drilling 36-foot lift holes through trap rock and granite gneiss was the job facing Geo. M. Brewster & Son, Inc., on the West Nyack section of the New York-Buffalo Thruway.

As is usual in cases like this, Timken® carbide insert bits proved the most economical. They give highest drilling speeds and lowest cost per foot of hole in extremely hard and abrasive ground—especially where it is otherwise impossible to drill out full increments of steel. They're most economical for small diameter blast holes and constant gage holes, too.

But in ordinary ground, where Timken multi-use bits can drill out full increments of steel, they cut drilling costs even more.

It takes *both* bit types to solve *all* drilling problems. When they're Timken bits, both types are interchangeable on the same steel. It's a quick and simple matter to switch from one type of Timken bit to the other—as quick and simple as taking one bit off the steel and screwing on another. And there are many different sizes and designs of Timken bits in each thread series, to fit all drilling situations.

All Timken bits are made from electric-furnace Timken fine alloy steel. And all have special shoulder unions—a

Timken Company development—that save the threads from drilling impact damage.

Get the impartial recommendation of the Timken Company Rock Bit Engineering Service on which type and design of bit you should use. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken Threaded  
multi-use rock bit



Timken Threaded  
carbide insert rock bit

... your best bet  
for the best bit  
... for every job

**TIMKEN**  
TRADE MARK REG. U. S. PAT. OFF.

# Making LIGHT STUFF out of HEAVY DIGGING!

• This Northwest is in the pit of the Carolina Solite Corp. at Aquadale, N. C. It is handling a material classed as Monroe slate which is made into a lightweight aggregate.

Monroe slate is largely  $\text{SiO}_2$ —hence it is tough—almost entirely quartz and it has a hardness of nearly 7. It must be drilled and blasted before loading and unlike many slates, it breaks into blocky chunks.

The loading is done with a 1½ yd. Northwest which is one of 6 Northwests bought by the Carolina Solite Corp. and its parent company the Southern Lightweight Aggregate Co. of Richmond, Va. Northwests are built for tough mining work like this. The Dual Independent Crowd utilizes force most other independent crowd shovels waste, giving the extra push for hard rock work. The "Feather-Touch" Clutch Control makes operation easy without resorting to delicate pumps, compressors and valves. Cast steel machinery bases and side frames take the shocks of heavy digging and the Cushion Clutch eliminates overloads before they can damage operating machinery. These are but a few of the many advantages that make the Northwest a real Rock Shovel.

If you are modernizing or have a pit problem let a Northwest man tell you the whole story.

**NORTHWEST ENGINEERING CO.**  
1514 Field Building, 135 South La Salle Street,  
Chicago 3, Illinois



# NORTHWEST

Convertible for any Mining Material Handling or Excavation Problem



# FACING A TOUGH PROPOSITION?

you can beat it with JALLOY



## J&L JALLOY HEAT-TREATED PLATE BEATS WEAR DUE TO ABRASION

Jalloy lowers maintenance costs on coal conveyors

Jalloy provides longer wear with less repair in truck bodies

Jalloy Plates exceed other steels by margins of 4 to 1

Jalloy Aprons in Tyrone screen last 3 times as long as other steels

J&L Jalloy Heat-Treated Plate is the special purpose steel that is heat treated to provide longer wear on applications where impact and abrasive conditions are severe.

In comparison with other abrasion-resistant steels as well as mild steels, it gives optimum results when heat treated to a Brinell hardness of 340 and up. Jalloy permits savings in steel costs, maintenance, and repair. Furthermore, it is easily welded.

Jalloy is available in three grades to meet various service requirements.



**Jones & Laughlin**  
STEEL CORPORATION - Pittsburgh

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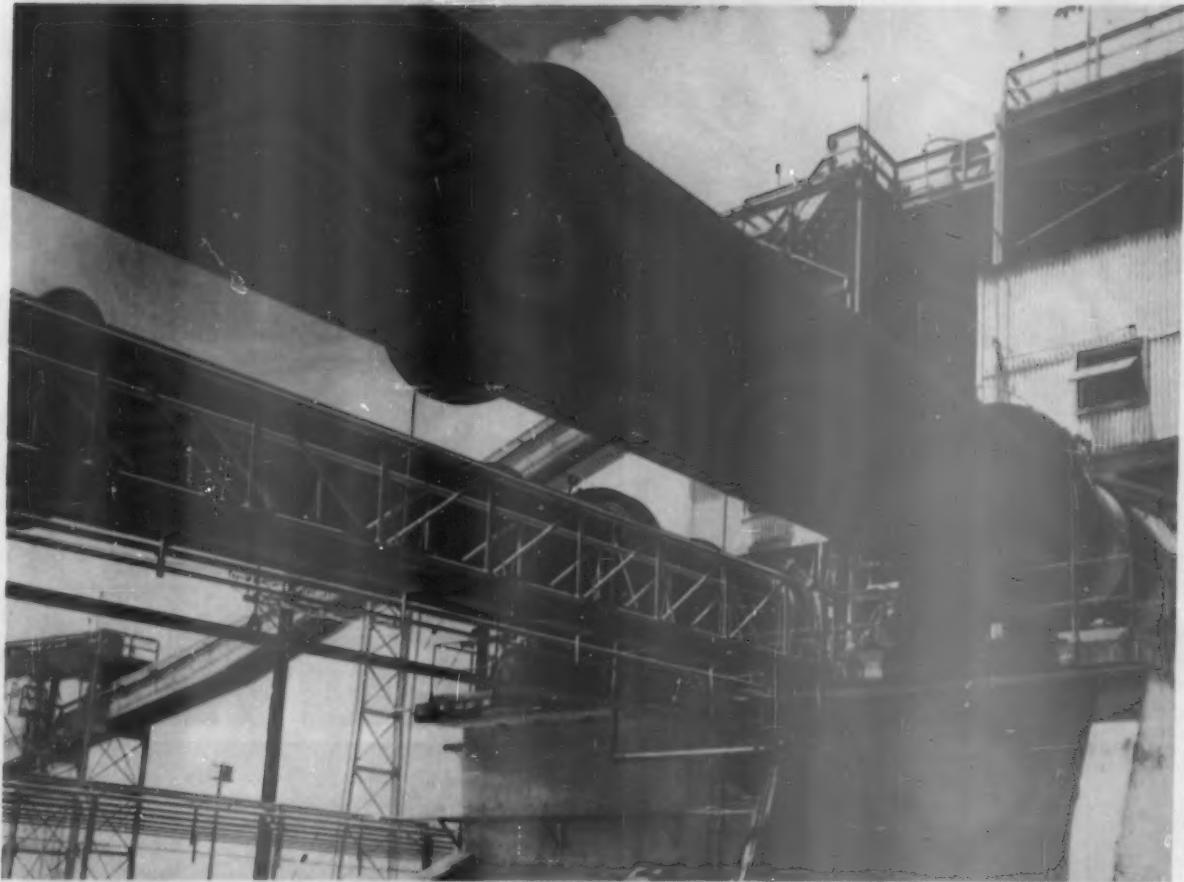


Jones & Laughlin Steel Corporation  
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 Please mail complete data concerning Jalloy.  
 Please have your representative call.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

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## YOUR INVESTMENT IN A TRAYLOR KILN Pays off with lifetime interest

Traylor never loses interest in a Traylor Kiln. You see, the Traylor Company is not so big that it cannot take a personal interest in each of its customers, yet it is large enough to have developed and produced many revolutionary improvements in Rotary Kiln design. Periodic visits from Traylor engineers assure the maximum results from these advanced Traylor features. These regular calls turn a "Traylor-Made" Kiln into an investment that pays regular dividends throughout its long operating life.

**SEND FOR BULLETINS . . . just mention the Traylor Equipment that interests you.**

TRAYLOR ENGINEERING & MFG. CO.  
705 MILL ST., Allentown, Pa.

Canadian Mfrs.: Canadian Vickers, Ltd., Montreal, P. O.



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ROCK PRODUCTS, January, 1955



PRIMARY  
GYRATORY CRUSHERS



ROTARY KILNS,  
COOLERS, SLAKERS



SECONDARY  
GYRATORY CRUSHERS



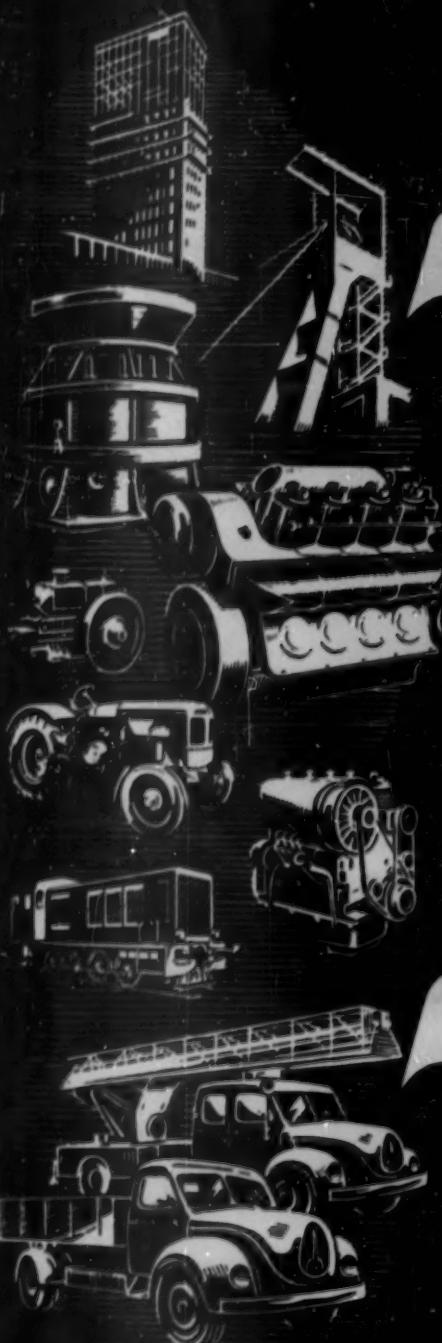
GRINDING MILLS



JAW CRUSHERS



APRON AND  
GRIZZLEY FEEDERS



SINCE 1856

## HUMBOLDT

Mines Equipment, Mineral Dressing Plants, Crushing and Grinding Machinery, Cement Factories, Metallurgical Works, Coal Preparation Plants, Steel Constructions for Buildings and Bridges.

SINCE 1864

## DEUTZ

Otto, Gas-, Diesel-Engines for Every Purpose of Two- and Four-Stroke design; Output range 3-1650 H.P. Cooled by water or air; Diesel-powered tractors, Diesel locomotives, Gas producer plants.

SINCE 1864

## MAGIRUS

Trucks and busses driven by air cooled DEUTZ Diesel engines. Vehicles for municipal services, Fire ladders, fire engines, Fire fighting water trucks, Two-wheeled ladders, Fire fighting equipment.

**KLÖCKNER-HUMBOLDT-DEUTZ AG · KÖLN**

Address inquiries from U.S.A., Alaska, Hawaii and Puerto Rico to:  
**DIESEL ENERGY CORPORATION, 143 Liberty Street, New York 6, N.Y.**  
Certain territories open for distributors.

# GULF QUALITY LUBRICANTS and FUELS

**selected for another  
Lambert Brothers Quarry**



This Lambert Brothers Quarry at Marietta, Georgia, is one of their many operations in the South where Gulf lubricants and fuels are used exclusively.

The selection of Gulf products for this latest Lambert Brothers operation was based on long, successful experience at their other quarries, where cold, hard facts and figures proved that with Gulf lubricants and fuels their equipment performs better, requires fewer overhauls and less maintenance expense.

And they appreciate the engineering service that Gulf provides to insure the right lubricants and fuels for every unit and climatic condition.

Contact your nearest Gulf office today and let us discuss with you how Gulf products and fine service can benefit your operation.



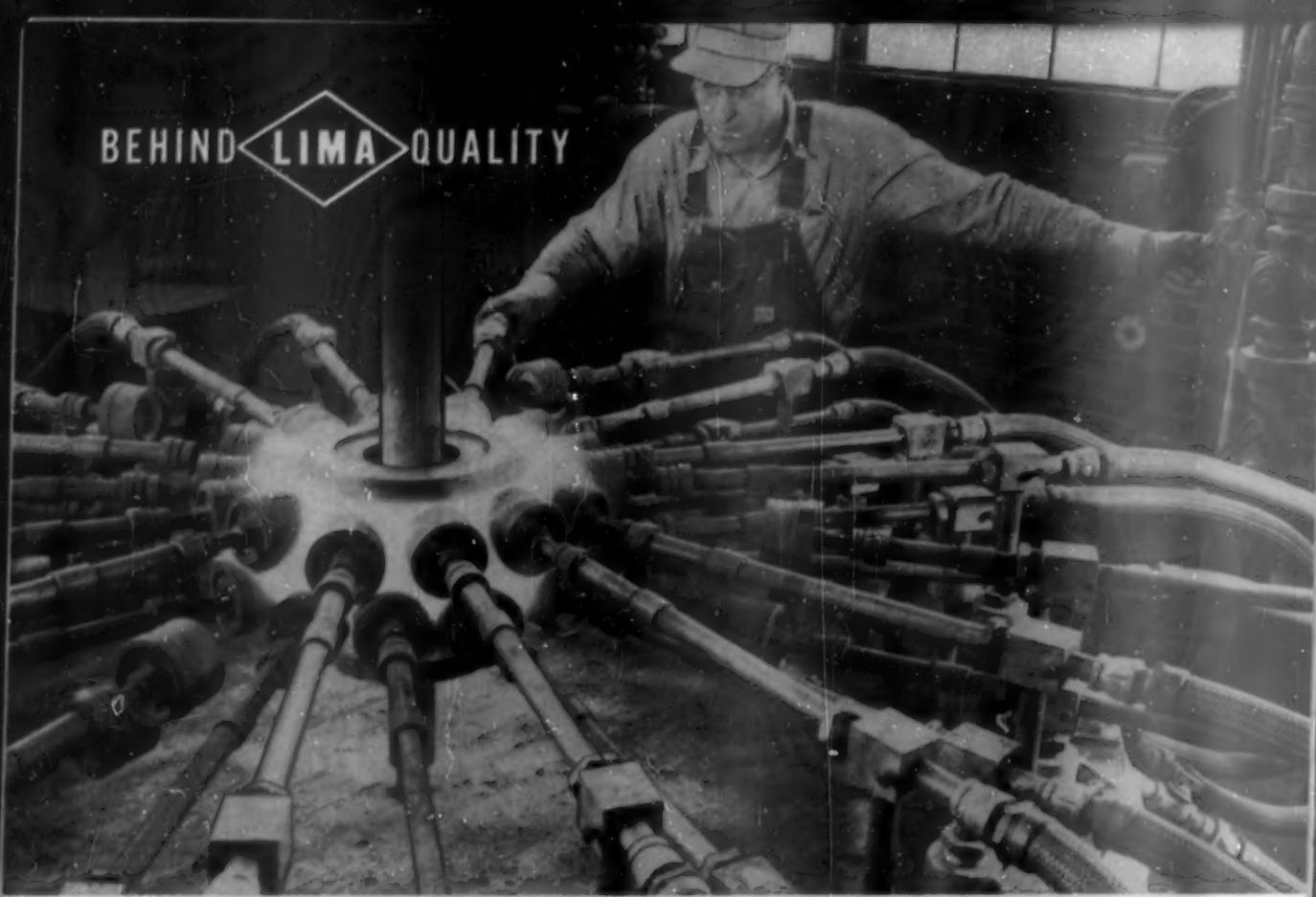
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1822 GULF BUILDING, PITTSBURGH 30, PA.



*support  
Junior  
Achievement*  
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January 28-  
February 5, 1955



BEHIND **LIMA** QUALITY



## Heat treating gives LIMAS greater strength and longer service life

In the 1500 degree F. circle, formed by this battery of gas burners, is a shipper shaft pinion destined to become a vital part of a LIMA shovel. This heat, the succeeding water quench and controlled tempering process, establishes a uniform hardness up to two inches in depth to the teeth and teeth base of the pinion. This means longer serviceable life to this important part.

Flame and induction hardening are used on rollers, gears and shafts of every LIMA machine. Heat treating, used with our know-how, is one of the reasons why LIMA is known throughout the world for quality-cost-conscious equipment men everywhere are saying, "you can depend on a LIMA for low maintenance and less down-time."

**COMPARE QUALITY!** No other machine gives you as much as LIMA!

1. Piston ring type dirt seal rings and retainers in crawler rollers.

LIMA Type 802 loading rock in Indiana quarry.

2. Moving parts are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation.
4. Anti-friction bearings at every vital bearing point.
5. Big capacity drums and sheaves are easy on cables.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath.

7. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

The above advantages contribute to LIMA'S greater output, less down-time and lower maintenance.

**COMPARE** and you'll specify LIMA for shovels (½ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD



**LIMA SHOVELS • CRANES • DRAGLINES • PULLSHOVELS**  
**BALDWIN-LIMA-HAMILTON**  
Construction Equipment Division • LIMA • OHIO • U. S. A.

# Good Cement...

## ...is very apt to start with GOOD Diamond Core Drilling

We emphasize the word "GOOD" because, unless a high percentage of core is recovered, the results may not be sufficiently informative.

You can rely upon securing a high percentage of core from any Sprague & Henwood Contract Drilling Operation because our methods and equipment have been developed during more than sixty years of experience with thousands of successfully-completed contracts; a considerable amount of which has been for the Cement Industry. Today, we have a large force of expert operators and an ample supply of modern equipment, so that we can undertake almost any job—anywhere—on very short notice.

Besides exploratory drilling, from the surface or underground, our contract service includes blast-hole drilling, directional drilling, foundation-test drilling, grout-hole drilling and pressure grouting. Estimates submitted promptly on request.

### SPRAGUE & HENWOOD, INC. SCRANTON 2, PENNA.

NEW YORK PHILADELPHIA PITTSBURGH  
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Leading Manufacturers, also, of High-Speed Diamond Core Drilling Machines, "Oriented" Diamond Bits and a complete line of Improved Accessory Equipment for Core Drilling and Soil Sampling. Write for illustrated catalogues containing complete specifications and all necessary working data on:

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Bits, Blast  
Bits, Chipping  
Bushings, Rod & Casing  
Casing, Flush Coupling  
Casing Taps  
Goniometers

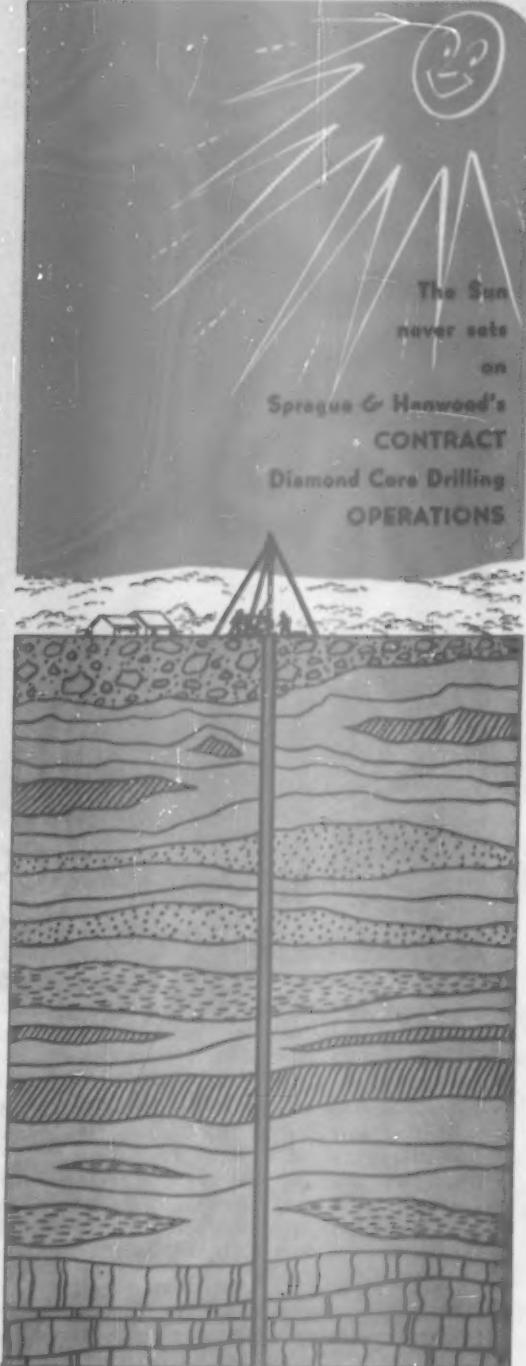
Coresbarrels, all types  
Coresbarrel Taps  
Core Lifters  
Couplings, Rod  
Derrick Sheaves  
Drill Bits  
Drill Bits  
Drill Machines  
Drive Hammers  
Drive Heads  
Drive Pipe

Drive Pipe Couplings  
Drive Shoes  
Extensions, Core Barrel  
Fishing Tools  
Flottail Bits  
Flush Coupling Casing  
Foot Safety Clamps  
Hoisting Hooks  
Hoisting Plugs  
Hoisting Plug Reducers

Hoisting Rings  
Hose, Waterswivel  
Hose, Suction  
Jaws, Lengths  
Jaws, Safety Clamp  
Lifters, Rod  
Mud Bits  
Pilot Reamers  
Plugs, Hoisting

Pressure Testers  
Protectors, Casing  
Reamer Shells  
Reducers, Rod  
Rods, Drill  
Rod Couplings  
Rod Taps  
Rock Bits  
Safety Clamps

Sawtooth Bits  
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Bobs  
Tape, Fishing  
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## CEDARAPIDS Double Impeller IMPACT BREAKERS

Give the Cement Industry  
Greater Reduction in One Pass

HURON PORTLAND CEMENT CO.  
reduces extremely hard  
quarry run shale to minus 3".

This big 5360 Cedarapids Double Impeller Impact Breaker installed at the Paxton, Michigan, quarry of Huron Portland Cement Co. is handling one of the toughest crushing jobs in the cement industry operating 8 hours a day and requiring practically no maintenance. The powerful breaking action of the Double Impellers reduces the extremely hard shale as it comes from the quarry to 3" minus.

In another cement company's limestone quarry a Double Impeller averages 600 tons per hour with a peak production of 724 tons per hour. Other Cedarapids Impact Breakers are giving equally satisfactory production for other cement companies, too. It will pay you to investigate the advantages of one for your primary reduction operations.

**IOWA  
MANUFACTURING COMPANY**  
Cedar Rapids, Iowa, U. S. A.

### IOWA ALSO MANUFACTURES

A complete line of ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND CONTINUOUS MIX TYPE BITUMINOUS MIXING PLANTS • DRIERS • DUST COLLECTORS • HAMMERMILLS • WASHING PLANTS • MOTORIZED HEAD PULLEYS • VIBRATING SOIL COMPACTION UNITS

\*U.S. Pat. No. 2373491, 2486421, 2525798, 2595943, 2595945, 2668074, Canada No. 409371, Mexico No. 44981, Argentina No. 60737, Brazil No. 33943.

# Pace-Setting HD-5G Tractor Shovel

## NOW BETTER 3 WAYS



### HD-5G TRACTOR SHOVEL

Rated capacity	1 1/4 cu yd
Belt horsepower	50
Weight, complete	16,200 lb
Dumping height	9 ft, 2 in.

From the time of its introduction seven years ago, the Allis-Chalmers HD-5G Tractor Shovel has been tops in popularity. Many thousands are daily proving their ability and versatility on all kinds of material handling and excavating jobs.

Now, design refinements make the HD-5G a three-way better value than ever before:

### 1. Has Bigger Rated Capacity

New bucket handles a big 1 1/4-yd load — streamlined design now helps roll in large loads with less tractor effort. The back of the bucket has been brought forward and the sides extended to cut spillage, put more payload where it's wanted.

### 2. Helps the Operator Do More

Cleaner dumping with the new bucket saves the operator time and effort shaking out loads.

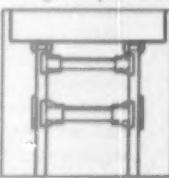
For added versatility, there is a two-position bucket available with both standard automatic return to digging position and operator-controlled tip-back. If the operator chooses to use the controlled tip-back, he can load the bucket, then tip it back approximately 25° before raising, assuring maximum output under special conditions such as downhill loading or loading loose materials.

The HD-5G helps the operator do more in other ways, too — giving him full vision, fast and easy control, cleaner platform and more comfortable seat from

which to work, and more working time with truck wheels, support rollers and idlers that need greasing only once every 1,000 hours.

### 3. Works at Lower Cost

The HD-5G now works at even lower cost than ever before — not just because it *does more*, but because it has features that mean *less maintenance, longer life*. For instance, new type tubular bracing on the bucket booms provides added strength and support, keeps the bucket in line. The floor at the rear of the new bucket has been raised seven degrees to reduce wear on the bottom sheet. Heavy-duty truck wheels and idlers are available for particularly tough working conditions. One-piece, full-length main frame permits unit construction so that major assemblies can be removed without disturbing adjacent units, putting tractor back on the job in hours rather than days.



#### Ten Quick-Change Attachments

#### Add to HD-5G Versatility

Bulldozer	Crane Hook	Tine Fork
Angledeeler	Light Material Bucket	Rock Fork
Narrow Bucket	Trench Hoe	— also rear-mounted Ripper

See your Allis-Chalmers dealer for more about these and other production-boosting features of the popular HD-5G Tractor Shovel.

**ALLIS-CHALMERS**  
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



# AND THE KILN BUILT BY VULCAN

**WILL  
GO  
ROUND  
'N  
ROUND**



That's just what the above equipment has been built to do: turn a 12'x175' VULCAN Rotary Kiln round and round with the smallest downtime possible. It can be done, and it is being done now, while you read this ad. Hundreds of VULCAN Rotary Kilns are working with a minimum of downtime, because of the experience, the top-flight engineering, and the highest quality material and workmanship built into every piece of equipment necessary to revolve a rotary kiln.

The top view shows the separately mounted main pinion with large flexible coupling between the pinion shaft and reducer, as well as the dynamatic clutch with flexible coupling for attaching to customer's motor.

Bottom view shows the set-up of auxiliary motor with reducer and clutch to the high speed shaft of the reducer. This one piece of equipment, along with all the others necessary to complete a Rotary Kiln installation, has been designed, and was built, by VULCAN.

VULCAN designed, VULCAN built equipment, means good, dependable equipment. Our 105 years of continuous business means EXPERIENCE. When you build, or re-build, contact VULCAN of WILKES-BARRE. Let their experience in design, experience in building, work for you. Estimates, constructive suggestion, and preliminary drawings will be furnished (as far as possible) without obligation. Write for Bulletin A-422 on Rotary Kilns, Coolers, Dryers, Retorts and other dependable processing equipment, TODAY.

Any information on items listed below  
will be sent to you immediately:

Rotary Kilns, Coolers and  
Dryers  
Rotary Retorts, Calciners, Etc.  
Improved Vertical Lime Kilns  
Automatic Quick-Lime  
Hydrators  
Briquetting Equipment  
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Steel Plate Fabrications  
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## VULCAN IRON WORKS

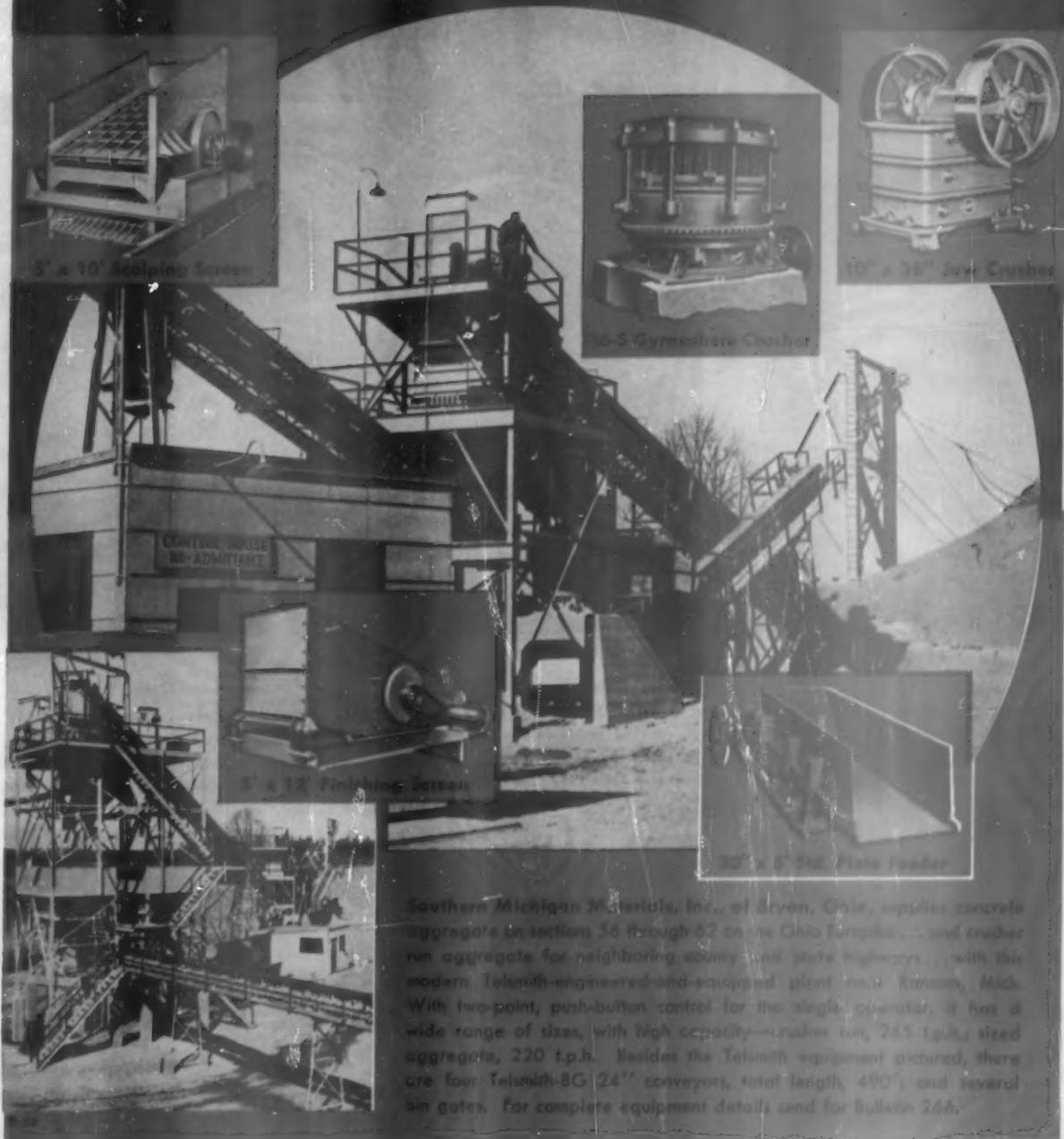
NEW YORK OFFICE  
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CABLE ADDRESS  
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**220 T.P.H. for OHIO TURNPIKE  
from this one man controlled**

# TELSMITH PLANT



Southern Michigan Materials, Inc., of Dryden, Ohio, supplies concrete aggregate on sections 56 through 62 on the Ohio Turnpike... and crusher run aggregate for neighboring county and state highways... with this modern Telsmith-engineered-and-equipped plant from Racine, Mich. With two-point, push-button control for the single conveyor, it has a wide range of sizes, with high capacity—crusher run, 285 t.p.h.; sized aggregate, 220 t.p.h. Besides the Telsmith equipment pictured, there are four Telsmith-BG 24" conveyors, total length, 490'; and several bin gates. For complete equipment details send for Bulletin 266.

## SMITH ENGINEERING WORKS

508 E. CAPITOL DRIVE

MILWAUKEE 1, WISCONSIN

Representatives in Principal Cities in All Parts of the World

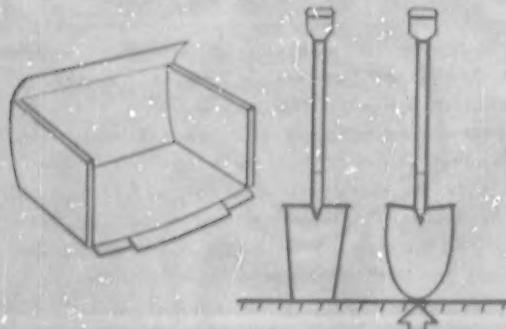
Cable Address: Songworks, Milwaukee

# Compare these dirt-



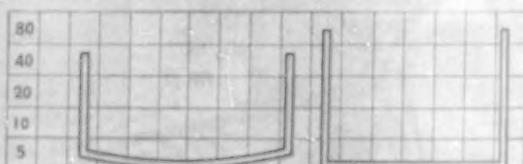
## PENETRATES FASTER

Curved and offset cutting edge on Allis-Chalmers Motor Scrapers concentrates all the horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the practical soundness of this Allis-Chalmers design.



## LOADS FASTER

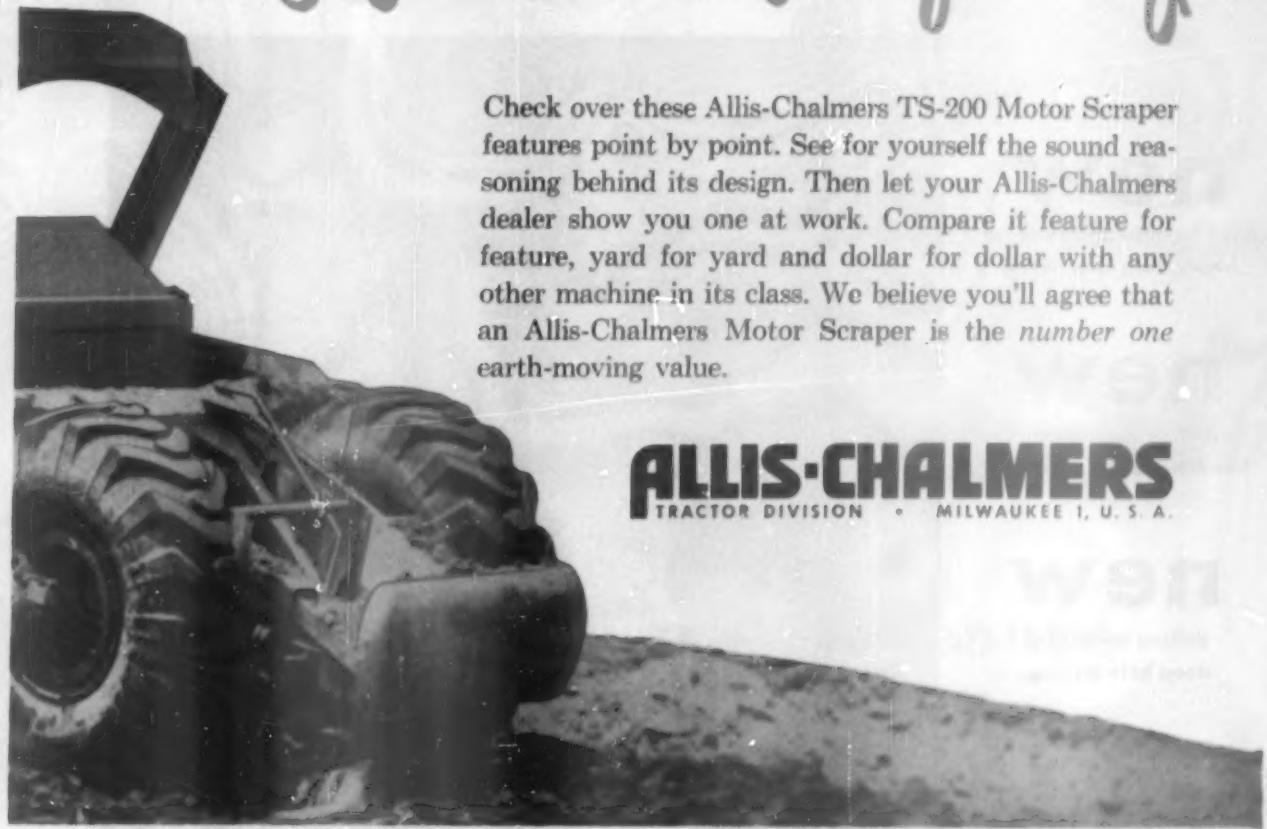
Low, wide bowl plays an extremely important part in ease of loading. Tests have proved that loading resistance is largely determined by the height to which the load is built. New dirt entering the bowl must lift the load directly above it in order to make room for itself.



This chart shows how loading resistance continually increases as the load builds up . . . how the lower, wider bowl of an Allis-Chalmers Motor Scraper requires less time and power to get the same yardage.

**PERFORMANCE MAKES DOLLARS**

# *moving features before you buy*

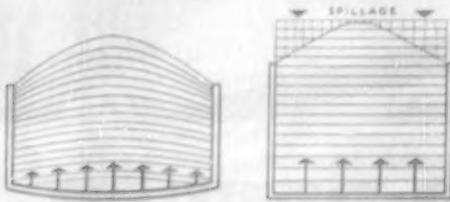


Check over these Allis-Chalmers TS-200 Motor Scraper features point by point. See for yourself the sound reasoning behind its design. Then let your Allis-Chalmers dealer show you one at work. Compare it feature for feature, yard for yard and dollar for dollar with any other machine in its class. We believe you'll agree that an Allis-Chalmers Motor Scraper is the *number one* earth-moving value.

**ALLIS-CHALMERS**  
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

## HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the bowl "boils" forward, to the rear and to the sides, producing an automatically heaped load without excessive spillage.



These diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.

## SPREADS EVENLY

Forward movement of ejector is timed with lifting action of apron, which provides a continuous flow of material to insure a smooth, even spread.



High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected.

**WHEN DESIGN MAKES SENSE**

# First in the field!

## New Gardner-Denver 4½" Wagon Drill

**new**

4½" hammer diameter for  
heavy-duty rock work.

**new**

drilling capacity for  
handling larger rock bits.

**new**

drilling power for  
deep hole drilling.

The new WRM123 heavy-duty Wagon Drill combines the new 4½" Drill, Ring Seal Shank, Sectional Drill Rods, and hydraulic power lifts for positioning the mast. Handles 10- to 12-foot steel changes. Write for additional specifications on Model WRM123.

The new  
Gardner-Denver

**WRM123**

4½" Wagon Drill



SINCE 1859

# GARDNER-DENVER

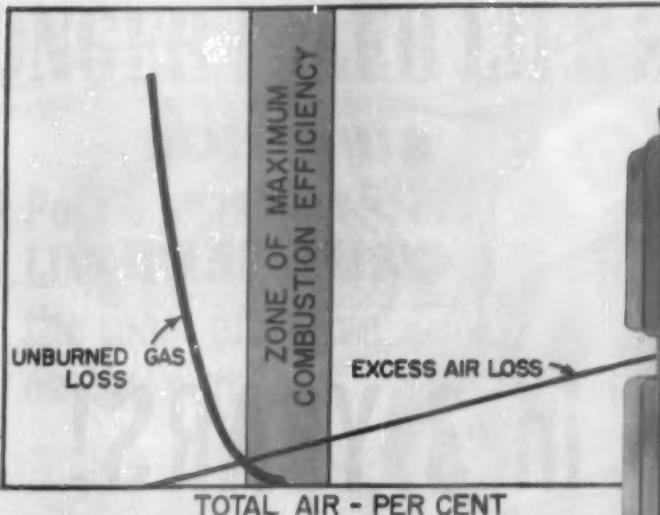


THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS  
FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada) Ltd., 14 Curly Avenue, Toronto 16, Ontario

HEAT LOST IN FLUE GASES  
PER CENT



The new Bailey Oxygen-Combustibles Analyzer-Recorder (shown at right) provides a continuous two-in-one check of combustion efficiency by recording both oxygen and combustibles in flue gas. As shown by above chart, both measurements are needed to determine combustion efficiency.



## BAILEY announces . . . New 2 in 1 way to measure Combustion Efficiency

The new Bailey Oxygen-Combustibles Analyzer-Recorder gives you a continuing double check on combustion economy. It's fast response measures and records:

1. Excess air—regardless of the fuel or combinations of fuels being burned.
2. The mixing efficiency of your fuel-burning equipment—by indicating the amount of combustibles in your flue gas, resulting from incomplete mixing of fuel and air.

Combustion efficiency depends upon fuel-air ratio. Too much fuel can be even more costly than too much air. And because of the interdependence of these two factors, no control that measures only one of them can give you complete protection.

Now, for the first time, you can check *both* with a single fast acting instrument, using the new Bailey Oxygen-Combustibles Analyzer-Recorder for industrial furnaces, kilns, heaters and boilers.

Fuel economy improves as excess air is reduced—until unburned fuel begins to show up in the flue gas. When this happens, combustion efficiency drops off

sharply if there are further decreases in the air-fuel ratio. That's why combustion gases must be analyzed for both oxygen and combustibles to get a true indication of efficiency—and that is why Bailey coordinates both measurements on the same chart, to show when excess air may be reduced safely without danger of greater losses from unburned gases.

The Bailey Oxygen-Combustibles Analyzer is an approved combustion safeguard.

Ask your local Bailey engineer for suggestions on application. Equipment details in Product Specifications E65-1 and E12-5. P31-1



# BAILEY METER COMPANY

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INSTRUMENTS  
AND CONTROLS

*For Power And Process*

## SUPERIOR Gyratory CRUSHERS

# 29 in 3 YEARS!



### NEW 32-Page Book Contains Helpful Crushing Data

- Packed with factual "how to" information on figuring hp requirements, impact and compressive strengths.
- Step-by-step procedures for estimating gyratory crusher sizes, capacities. Examples are worked out.
- Many other valuable facts on gyratory crusher operation . . . application . . . engineering.

*It's a book you'll want to have and keep!*

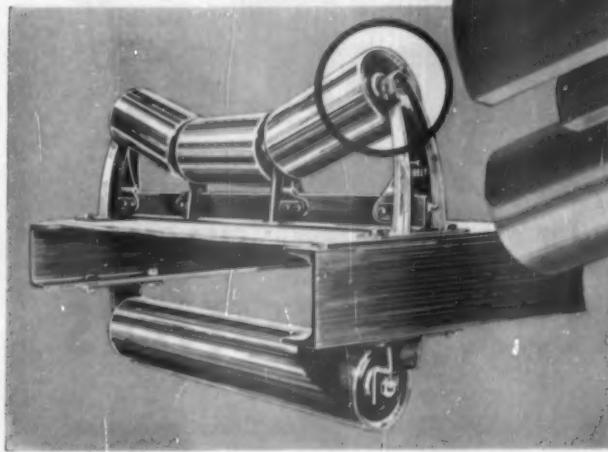
# ALLIS-CHALMERS

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# LONGER IDLER LIFE STARTS HERE

Positive grease seal of  
**LINK-BELT IDLERS** is  
the most effective  
on the market



**N**O BELT CONVEYOR IDLER is any better than its bearings. And no bearing outlasts its grease seals. That's why the seals on Link-Belt roller bearing idlers are so important to you.

The result of many years of intensive laboratory and field testing—the positive Link-Belt seal excludes dirt and moisture—retains lubricant. Felt and neoprene are combined with steel retainers and spacing collar to make an accurate cartridge labyrinth seal. There are no springs, no loose washers, no possibility of metal-to-metal contact.

And this is just one of the many engineering extras that make Link-Belt Idlers last longer. Check the box at right. Then ask your nearby Link-Belt office or distributor for a copy of new 48-page Book 2416. See for yourself how industry's most comprehensive line of idlers can mean lower handling costs for you.

**LINK-BELT**  
BELT CONVEYOR IDLERS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarborough (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



## 6 other reasons why **LINK-BELT IDLERS** cut handling costs

1. **HUSKY, HIGHEST QUALITY BEARINGS**, free and easy turning, assure maximum life, minimum belt-wear, low power consumption.
2. **SAFE, CONVENIENT GREASE FITTINGS** provide ease of lubrication—lubrication for longer life.
3. **CONCENTRIC ROLLS** have smooth surfaces and rounded edges. Machine-made, continuous welds prevent entrance of dirt and moisture.
4. **OUTER SHELL COUNTERBORES AND COUNTERBORES AND JOURNAL** of the heavy  $3/16"$  thick wall bearing retainer tubes with the press fits of the roll head assures hop-free rotation.
5. **STRONG, RIGID FRAMES** support rolls in perfect alignment. Rolls are securely held in place but can be easily removed for inspection and service.
6. **GROOVED HEX NUTS** lock into malleable brackets, creating truss effect—prevent shaft rotation and bracket spreading under both vertical and impact loads.



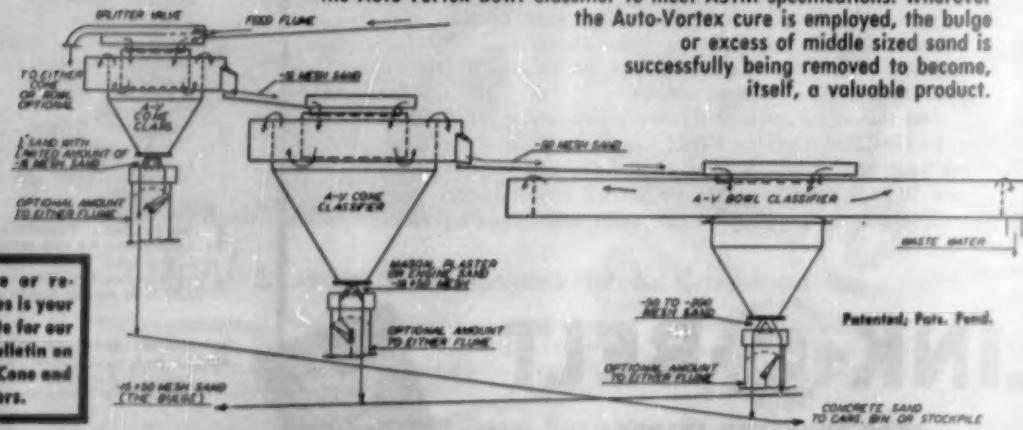
# ARE YOU TROUBLED BY THAT **BULGE** in the **MIDDLE?**

## AUTO **A**VORTEX CLASSIFIERS

with the exclusive Charles E. Wood Company System

For the bulge under your belt, go to your doctor! But for the bulge or excess of middle sized sand, we're the doctors! We've prescribed Auto-Vortex Classifiers with the SPLITTER VALVE to cure the ills of many plants throughout the country.

The SPLITTER VALVE permits control of water volume and hence assures precise gradation control. The fines, overflowed from the cones, are captured economically by the Auto-Vortex Bowl Classifier to meet ASTM specifications. Wherever the Auto-Vortex cure is employed, the bulge or excess of middle sized sand is successfully being removed to become, itself, a valuable product.



If the bulge or recovery of fines is your problem, write for our illustrated bulletin on Auto-Vortex Cone and Bowl Classifiers.



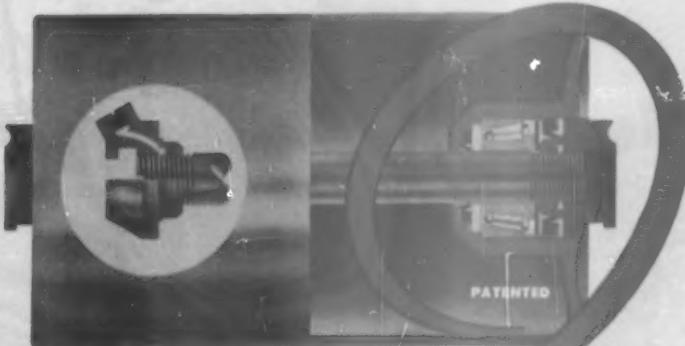
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Saves Grease!  
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CG-5209

**Long Life - THE ULTIMATE IN MINIMUM MAINTENANCE**

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## **the dirt flies faster—now with MUSCLES OF STEEL**

Straining laborers plying pick and shovel are a bygone memory because of today's excavating and road-building equipment. Modern power shovels and draglines use **muscles of steel**—rugged wire rope—to keep the dirt flying fast.

Helping to clear the way for needed highways is another of the important ways in which Wickwire Rope contributes **muscle** to America's might.

You'll find Wickwire Rope, too, in the mines and the quarries...in the oil fields and logging camps...with the fishing fleets...and in numerous materials handling operations. Whatever the job may be, the extra care and quality fabrication that goes into Wickwire Rope proves itself in longer life, more economical service and utmost reliability.

**every industry benefits from wire rope**

### **WICKWIRE ROPE**



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION  
THE COLORADO FUEL AND IRON CORPORATION



2533

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa  
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# More Bucyrus-Eries are Used for Output in ROCK than Any Other Make of Excavator . . .



There's a reason why you'll find more Bucyrus-Erie excavators on rock work than any other make! Featuring Individual Design for each model in the line, they're built to take the beating of quarry work shift after shift, year after year.

Individual Design assures a perfect match of the machine to its rated load. Front end, main machinery, power unit, and mounting are all perfectly

matched for smooth coordination of all functions, for fast work cycles, and for long life.

Investigate the additional advantages of Bucyrus-Erie *individual design* — see what they can mean to you in terms of higher overall output, lower overall costs. Get the facts from your nearby Bucyrus-Erie excavator distributor.

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# **GYROSET** VIBRATING SCREENS FOR **SIZING — DEWATERING**



**POSITIVE ECCENTRIC ACTION  
POSITIVE STROKE ADJUSTMENT**

**WITH ONLY 2 BEARINGS**

For scalping and for raw material sizing. A rugged two bearing positive eccentric screen. Adjustable as to stroke from 0 to  $\frac{3}{8}$ " for efficient economical service.

GYROSET Screens have a positive eccentric action giving a full circle throw thruout the length and width of the screen surface. They are two-bearing type providing minimum moving parts to give the required eccentric action.

GYROSET Screens can effectively scalp, size or de-water. Due to the adjustable action, the ability to operate at high speeds, and at any degree of pitch (or slope), GYROSET Screens can be readily adjusted as to action to give maximum volume for rough scalping—or can be adjusted to give the highest possible degree of efficiency in grading or in de-watering—at higher capacity than any other screening unit.

Electrically heated cloth can be supplied for damp operations.

Our "L & L" Cleaner will handle near-size blinding difficulties.

For slurry scalping, or any type washing or de-watering operations. Simple construction yet flexible in action. Size ranges from 18" to 72" in width and 4' to 16' in length—in one to three decks.



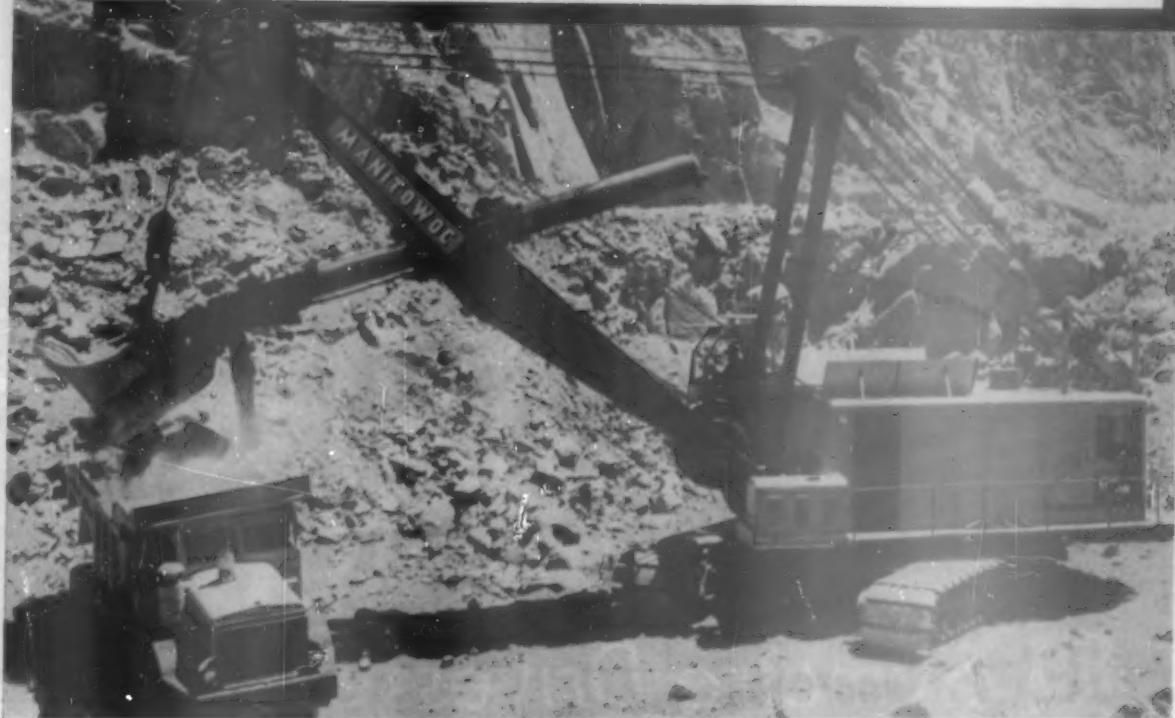
*Write for Literature*

## **PRODUCTIVE EQUIPMENT CORP.**

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CHICAGO 12, ILL.

# **NOTHING STOPS a mighty Manitowoc 4500!**



**Not even this solid mass of rugged rock can stop a powerful Manitowoc 4500! Yard after yard — load after load — this mighty of the mightiest keeps right on smashing out profitable tonnage.**

It can't be beat as a shovel — handles up to 5½ yards of rock like a handful of peanuts. Single, free-turning tubular stick rolls through saddle and makes digging shocks harmless. Complete diesel operation permits traveling anywhere without a trailing cable or electric supply.

It can't be beat as a dragline — it's "steady as she goes", with a low center of gravity; wide, long crawlers — providing maximum stability for long

reaching booms — features that mean full capacity buckets on every dragline job.

The 4500 main machinery is simple, powerful and fast, with only 15 gears and 8 sprockets — no lost motion — less maintenance and easy to service. All these advantages, plus the added power and performance of Manitowoc Torque Converter application.

See and get the facts on Manitowoc before you buy your next shovel or dragline.





## **FS** Symetro Drives

Years of continuous, reliable performance at highest efficiency and negligible maintenance.

Over 7500 HP transmitted through Symetro gears direct to trunnions of raw mills in cement plant illustrated above.

Driving station for large clinker mill showing motor and Symetro gear in separate enclosure (right).

For Smidh Machinery apply to:

**F. L. Smidh & Co., A/S**  
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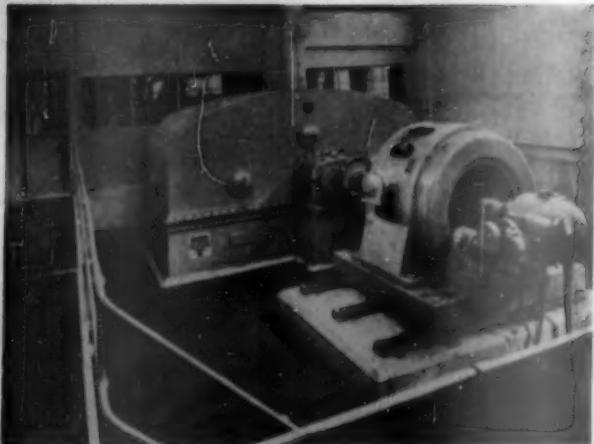
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# What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

January, 1955

An additional \$26 billion must be spent in the next 10 years to step up the country's highway development program, according to Gen. Lucius D. Clay, chairman of President Eisenhower's advisory committee on the highway program. He stated that the committee thus far has reached no conclusions or made any recommendations, however, a "pay as you use" program financed by a special bond issue amortized by federal gas and oil tax funds, has been termed the most feasible means to get the additional funds. He also said that \$23 billion is needed to improve 40,000 miles of interstate highways and \$3 billion for new construction in addition to the \$50 billion already planned for improvements in the next 10 years.

Synthetic mica production, at a rate of 1000 tons annually, is scheduled to begin early in 1955, at a plant in Caldwell, N. J., which is being built by Synthetic Mica Corp., a subsidiary of Mycalex Corp. of America. According to Jerome Taishoff, president of the parent company, the manufacture of synthetic mica would alleviate a shortage of mica, if in time of war, the foreign supply should be cut off. The synthetic material is comprised of aluminum oxide, magnesium oxide, silica sand, a fluorspar and potash feldspar. The material cannot yet be made in crystal sizes large enough for all uses, but as large production facilities become available, this problem should be overcome.

A new wrinkle in the use of belt conveyors has been reported in the sports field. It seems that two former university track coaches have developed a "Track Trainer" for training future track stars. The device, designed primarily for high schools and small colleges which haven't enough year-around training space for distance runners, consists of a 12-ft. conveyor belt revolving over a flat steel plate. A 3-hp. motor turns the belt at speeds ranging from a slow walk to one as fast as a 60-sec. quarter mile. The entire assembly weighs about two tons. It is being manufactured by Barber-Greene Co.

According to a recent "Washington News Letter," published by the American Concrete Pipe Association, approximately \$130 million of local money for airport construction will be available since Congress has approved \$22 million for federal grants. States and cities holding money in reserve will now be able to proceed with construction. Allocations will be based on new rules which will confine federal aid to major air terminals and then only for additional airstrip facilities.

The theft of a conveyor from a Freeport, Ohio, quarry was recently reported. It seems that thieves are getting bolder — in order to remove the conveyor from the pit, it would almost have to be dismantled.

Construction awards for religious and related buildings for the 37 states east of the Rockies set an all-time high in that category for the first nine months of 1954, as reported by F. W. Dodge Corp.

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## WHAT'S HAPPENING

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**According to a review of cements** in "Industrial and Engineering Chemistry," the use of precast concrete wall panels has cut the cost of wall construction by as much as 33 percent, and has cut erection time in half. These precast panels range in thickness from 5 to 8 in., with area dimensions such as 8 x 8 ft. or 8 x 10 ft. Panel edges have tongue and groove contours, and the sealing between panels is done by using rubber strips and calking compound. Cast-in metal inserts bolt directly to the steel building framework. A favorable heat transmission factor is obtained by using a sandwich of insulation in the panel. A summary report on portland cement concretes reports that specific nuclear properties are imparted to the concrete for shielding purposes through the use of various aggregates. In another study, cements of different composition were exposed to thermal neutrons and gamma rays to determine their shielding properties. A cement with tourmaline and serpentine is reported as one of the best. A modified hydraulic cement, particularly adapted for cementing oil and gas wells, is obtained by mixing a cement with an oxidized paraffin. At 90 deg. F., the stiffening time or the limit of pumpability of the portland cement slurry was increased from 70 to more than 400 min.

**A \$250,000 experimental project** has been started by Standard Oil Co. of New Jersey, to determine whether atomic processing of petroleum products would provide cheaper and more powerful motor fuels. Preliminary experiments showed that gamma rays produced by cobalt pipe cause chemical reactions with petroleum products heretofore beyond the reach of science. At present, basic petroleum refining processes involve the application of heat or pressure, or the use of catalysts, or a combination of these factors. The atomic generated gamma rays in the preliminary tests indicate a possible production of gasoline without the use of heat, pressure, or catalysts. The most promising use, however, is in the field of polymerization, a process by which some types of petroleum hydrocarbons can be made to combine with each other to transform certain petroleum and related raw materials into synthetic rubbers, plastics, lubricating oil additives, blending agents, components of paints, etc.

**Load-carrying capacities of roads** may soon be tested "on-the-spot" by means of a mobile machine developed by Shell Oil Co. The unit can be hauled about trailer-style, and requires no samples or laboratory work. A vertical shaft and base plate mounted on the machine pound into the pavement, simulating the jarring effects of traffic. Electronic units are said to measure and record movements in the pavement to one ten-thousandth of an inch, thus determining how much bend there is in the top surface, how far load vibrations travel through the pavement, and how much the road gives under a vehicle. The company has built one model, with which it will give demonstrations to road building authorities around the country before planning commercial production.

**Ohio's controversial axle-mile truck tax** produced only \$11,183,117 in its first year of operation, compared to the expected total of \$20,000,000. However, payments from 31 firms which appealed to the United States Supreme Court, and others which have been granted extensions, would add \$1,000,000 to the total. The levy is charged against trucks with three or more axles, and is based on how far they travel on Ohio highways. Reprisal taxes of various kinds have been initiated by other states against Ohio trucks as a result of the levy.

THE EDITORS

# For Cooling Hot Cement

FLS

Cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging is an important problem to many cement manufacturers.

The FLS Cement Cooler, developed especially to overcome this problem, is externally water-cooled, the hot cement being introduced at the base and conveyed in a thin layer along the cooled interior surface to the top, where it is discharged. Thus an intimate contact is established between

surface, assuring high cooling efficiency.

In addition to cement, the FLS Cooler is applicable to many other similar dry pulverized materials.

HOT CEMENT

COOL CEMENT

FLS Coolers are furnished in sizes varying from 3' to 6'6" in diameter and from 6' to 18' in height, with capacities up to 265 barrels of cement per hour.

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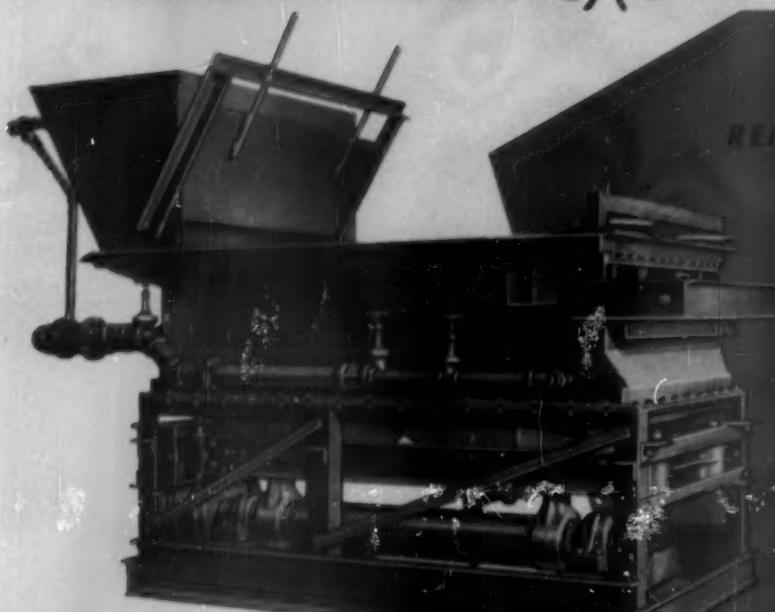
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# Sand & MECKUM'S GRAVEL JIG



REMOVES  
WOOD  
LIGNITE  
COAL  
SOFT STONE  
POROUS STONE  
CHIRT  
OCRE  
SHALE  
CLAY

BY SEPARATING THE MATERIALS  
OF DIFFERENT SPECIFIC GRAVITIES  
THROUGH A MECHANICAL PROCESS

Another Progressively Engineered Product  
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Gives You:

- A High Production Unit
- Low Initial and Operating Cost
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- Premium Product to Meet Increasingly Rigid Specifications
- No Stockpile Disintegration or Discoloration
- Finished Product Washed Exceptionally Clean

For all details as to how the Meckum Gravel Jig can be incorporated in your plant, write us.



53 W. JACKSON BLVD., CHICAGO, ILLINOIS

DAYTON ROAD, OTTAWA, ILLINOIS



## "The right wire rope? That's EASY every time!"

IT'S A CINCH to pick the right wire rope for top performance in quarries . . . and it pays off! Roebling's new catalog has a section devoted to rope for the quarries field . . . shows at a glance the best rope for each purpose and gives you a simple, unique code number ordering system which for the first time in wire rope history *positively* identifies the desired rope.

Write for your copy of the new "Roebling Wire Rope Recommendations and Catalog." And remember that the Roebling Field Man at your nearest Roebling office or distributor is always available to help find the answer to special wire rope problems.

**ROEBLING**    
Subsidiary of The Colorado Fuel and Iron Corporation



**JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J.**  
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5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA,  
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291 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.



ON January first of this year, Dorr-Oliver Incorporated became a corporate entity through the merger of The Dorr Company, Engineers and Oliver United Filters Incorporated. Not a merger in name only, the combined staffs, engineering skills and facilities of the two organizations are being welded into a single unit, with a vastly increased capacity to serve on a worldwide basis.

Both companies have their roots in gold ore metallurgy. The Dorr Company was founded by John Van Nostrand Dorr on his early inventions, the first of which was developed in 1904 to solve the problem of mechanical classification of gold ores. Oliver United had its beginning in 1907 with

the development of the first successful continuous vacuum filter by Edwin Letts Oliver and its practical application to the cyanide process. Since their inception, both companies have grown steadily in technical stature to positions of leadership in their ever-widening and complementary fields.

This cumulative, combined experience . . . coupled with a progressive faith in the future . . . is the strength of Dorr-Oliver. For present and future clients alike throughout the world it means better solutions to process problems in those fields of metallurgical, chemical, industrial and sanitational engineering in which Dorr and Oliver have specialized for nearly half a century.



**DORR-OLIVER**

INCORPORATED  
STAMFORD, CONNECTICUT, U. S. A.

# "Completely Satisfied"

with LIPPMANN equipment

at K. L. Dunbar Slag Company



THIS SLAG-CRUSHING PLANT in Pennsylvania processes 400 tons per hour. Maximum feed size is 18 inches and the 24" x 36" Lippmann "Grizzly King" Jaw Crusher is set at 3"—a 6 to 1 reduction. Mr. Dunbar says, "occasionally a piece of slag with high metallic content gets past the pickers, but except for a couple of GRUNTS when this happens, the crusher makes no other complaints."

He further states, "during the five months it has been in service, it has required no adjusting or servicing except for lubrication, so naturally we

are completely satisfied with this kind of production and uninterrupted service. Except for the first cost, we wouldn't know the crusher was there. I might say in passing that the three Lippmann conveyors are giving the same kind of trouble-free service."

You, too, like so many others, can look to Lippmann-engineered equipment for those extras in performance that mean more production and lower costs. See your Lippmann dealer or contact Lippmann Engineering Works, 4605 W. Mitchell St., Milwaukee 14, Wis.

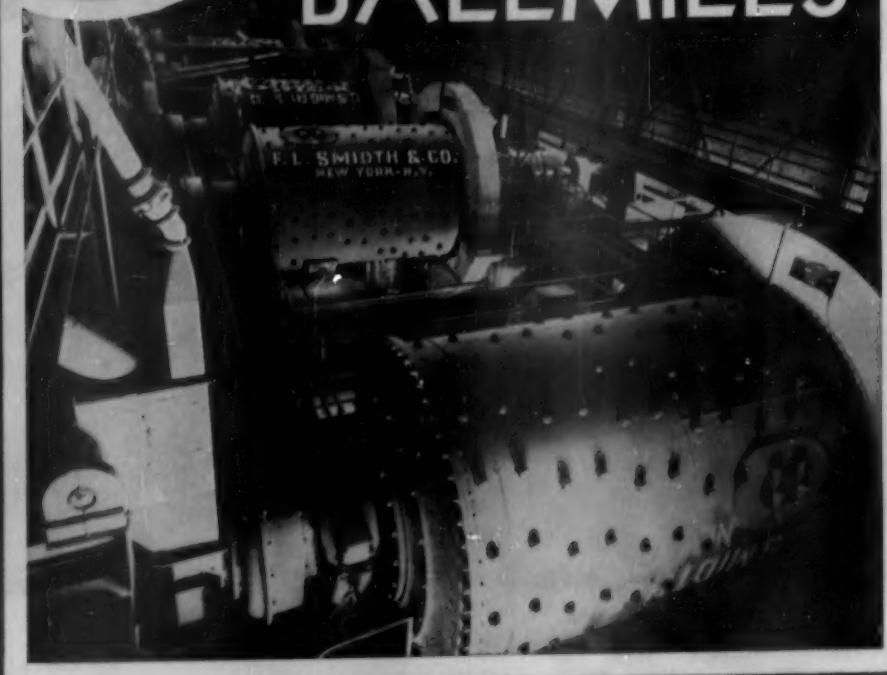


# LIPPMANN

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

# SMIDTH

## BALLMILLS



WET OR DRY GRINDING  
OPEN OR CLOSED CIRCUIT  
ALSO AIR SWEEP FOR GRINDING AND DRYING

For Smidth Machinery apply to:

F. L. Smidth & Co., A/S  
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# LOAD

Model 543 pneumatic tired Bucket Loader.  
Easily converted for coal or snow.



Model 82-A crawler mounted Bucket Loader. Hydraulically controlled trimmer-conveyor optional.

**LOAD** the cheapest way.

**LOAD** from stock pile, bank, or windrow.

**LOAD** and screen in one operation.

**LOAD** and strip topsoil in one operation.

**LOAD** with the most advanced engineering developments in the loading field.

Let us show you how a Barber-Greene Loader can reduce your costs.

54-34-BL

## Barber-Greene

AURORA, ILLINOIS, U.S.A.

WRITE for  
INFORMATION

descriptive literature . . . sound movies  
cost studies . . . nearby job inspection . . . plant layouts



# Here's how 11 owners cut costs



## with Tournapull Rear-Dumps

Huron Portland Cement Company, Detroit, formerly used a narrow-gauge railway system for hauling shale to their mill at Alpena, Michigan. To cut costs and speed the operation, they now have 2 LeTourneau-Westinghouse Rear-Dumps doing the entire job.

### 2,700 tons daily on 1900' cycles

In typical operation, a 3-yard shovel loads these Rear-Dumps with 18 tons of shale in  $1\frac{1}{4}$  minutes. Despite adverse grades of 4 to 7% on the haul, each unit takes only 7 minutes to complete 1900' cycles. The 2 haulers regularly deliver 13 to 14 loads (234 to 252 tons) per 50-minute hour. Company records show an average production per 11-hour shift of 150 loads (2,700 tons). This is enough shale to produce 30,000 barrels of cement daily, greatest output of any mill in the world.

It will pay you to try LeTourneau-Westinghouse Rear-Dumps, too. They are available in 9, 18, 35, and 50-ton capacities to fit your job. Get facts on performance . . . price . . . and delivery. Call us any time.



186 hp hauler quickly climbs 37° of 4 to 7% grades to reach crusher. Positive power steer, high-traction tires, and 4-wheel multi-disc air brakes enable operator to work safely at high speeds.



Assigned to plant feeding all 9 months of the year, machines keep busy the other 3 months by removing overburden and stockpiling crushed shale. At times, they haul clinkers from plant to dump.



**TOURNATRACTOR®**  
206 hp, 18 mph tractor  
(for pulling, pushing)



**TOURNAPULL®**  
7, 14, 22-yr. capacities  
up to 40 mph



**REAR-DUMPS**  
9, 18, 35, 50 tons  
136, 206, 293, 430 hp



**BOTTOM-DUMPS**  
On thru railroad feeding  
cap., 18 and 27 yrs.

## CALIFORNIA MOUNTAIN QUARRY tried 1...bought 2 "C's"

Monolith Portland Cement Co. tried 1 LeTourneau-Westinghouse Rear-Dump . . . liked it so well they bought 2 more for hauling rock from the cramped quarters of their mountain-face limestone quarry. Working at an altitude of 3800', each "C" carries 16 tons per load . . . makes five 400' cycles every 50-min. hour.

## 3,000,000-YD. PA. MINE JOB dumps $\frac{1}{2}$ min. faster than trucks

J. Robert Bazley Inc., Pottsville, Pennsylvania, strips overburden at their Mt. Carmel coal mine with 3 Rear-Dumps. On 2100' haul, each shovel-loaded "C" removes 15 bank yds. of sand, clay and rock every 7.4 min. With electric dump, fast-spotting "C's" unload  $\frac{1}{2}$  min. faster than trucks.

## ISOLATED GOLD MINE flies in "D" to haul ore

To reach isolated Nicaragua mine, 9-ton Rear-Dump was cut apart and flown 110 miles over jungle. Re-welded, it now hauls gold ore and waste to crusher. In typical month, it worked 356 hrs., moved 4698 tons. Hauls averaged 9800', all upgrade, with 9500' at 3 to 10%, 300' at 12 to 20%.

## ARIZONA COPPER MINE 40 tons every 11.2 minutes

An Arizona copper mine owns 40 and 50-ton LeTourneau-Westinghouse Rear-Dumps. Cycle of 4500 ft. takes their units an average of 11.2 minutes, despite 650 ft. of 10% adverse grades and narrow winding haul roads. Cycle time includes 2 minutes to load,  $\frac{1}{2}$  minute to spot and dump.

## OHIO CLAY QUARRY moves 100 tons of rock hourly

At U.S. Quarry Tile clay pit, Contractor Adolph Bockus, Canton, hauls 100 tons of overburden hourly with his 122 hp "D" Rear-Dump. Rig carries 9 to  $9\frac{1}{2}$  tons per load. Haul speeds average 14 mph over a 700' haul (which includes grades up to 20%) . . . output, 11 trips per 50-minute hour.



Carry full loads anywhere  
approx. 10, 20, 30, and 40 tons

## INDONESIA TIN MINE drives along narrow dikes

Constructing a network of dikes to get at underwater tin deposits, 3 D Rear-Dumps moved 11,000 yds. of sand monthly over 3-mile cycles. Much of haul was along narrow existing dikes. Performance of these 3 LeTourneau-Westinghouse units on this treacherous work earned an order for 16 more from owners, Bangka' Tin Mines, Inc.



## WEST VIRGINIA COAL MINE hauls 240 tons per hour

Red Parrot Coal Co., Prenter, uses a C Rear-Dump to haul slate from refuse hopper to tailings dump. On 3000' cycle, "C", loaded with 15 tons, makes 16 trips per 50-min. hour. Output averages 240 tons hourly. With this production, "C" handles as much work as three 6 to 8-ton dump trucks.



## INDIANA LIMESTONE QUARRY 82,476 tons for 7.6c per ton

Dunn Limestone Co., Spencer, in 6 months hauled 79,923 tons of rock plus 2553 tons of limestone and fluxing stone with 2 "D's". Total costs for 1,932 hours were \$7234 (\$2760 wages; \$3800 depreciation, insurance, taxes; \$674 fuel, repairs). That's \$3.74 per hour or 7.6c per ton hauled.



## 200,000-YD. W. VA. TUNNEL JOB turns where trucks can't

Bates & Rogers Construction Corp., Chicago, teamed 2 D Rear-Dumps and 2 trucks to haul muck and shale for B. & O. railroad tunnel near Clarksburg. While trucks needed skid plate to turn inside 31' wide tunnel, "D's" made 90° turns (in 12'4" radius) and easily maneuvered under shovel.



## PENNSYLVANIA COAL MINE 3 "A's" take place of 10 trucks

Colitz Coal Co., Pottsville, uses 3 "A" Rear-Dumps in place of ten 12 to 15-ton trucks. These big rigs carry 40 to 51 tons of overburden per load up 20% grades; over 2000' cycles, make about 50 trips each per 7½-hr. shift. Says Owner Colitz, "These units have cut operating costs 40%."



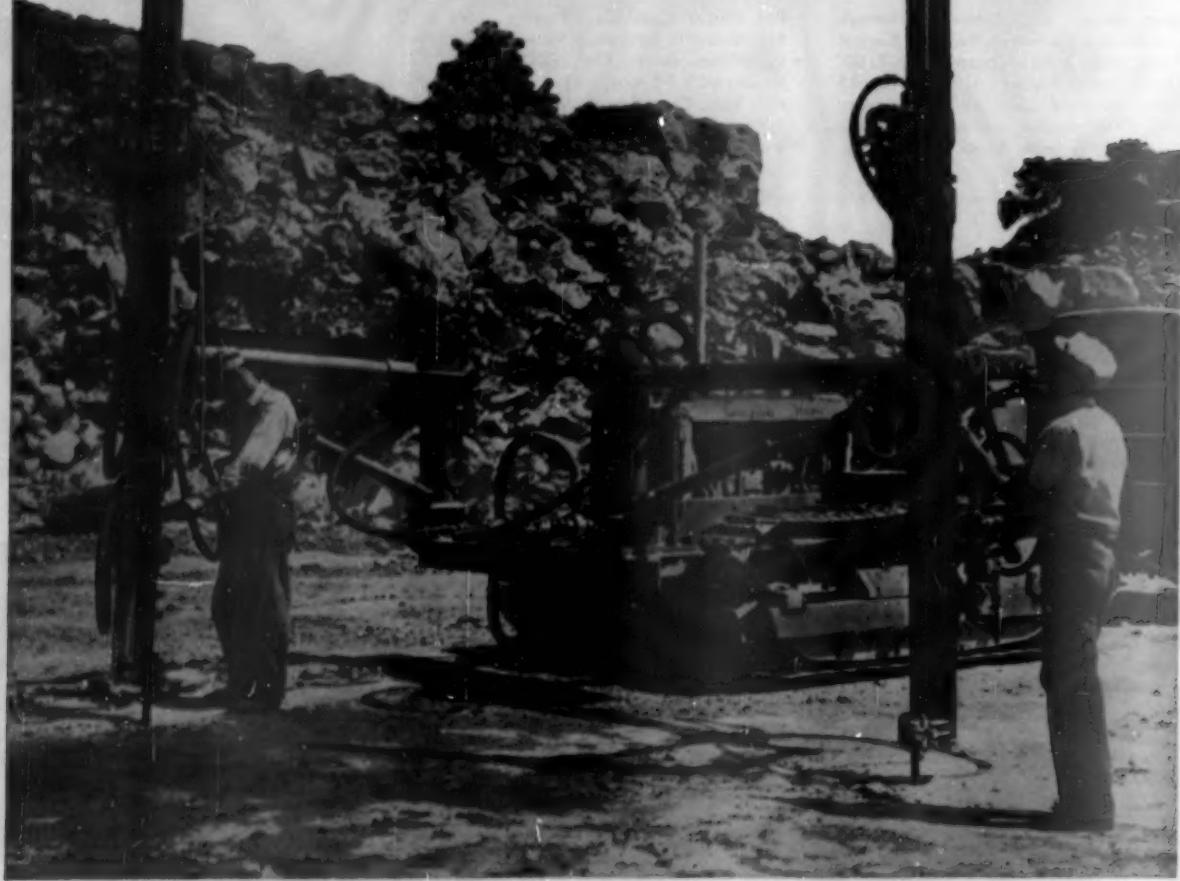
\*Trademark Reg. U.S. Pat. Off. \*\*Trademark R-601-Q



**LeTourneau-Westinghouse Company**  
PEORIA, ILLINOIS  
A Subsidiary of Westinghouse Air Brake Company

# A triple threat quarry rig...

AT ITS RUGGED BEST!



Just think of the mobility and drilling efficiency you can get from this quarry rig!

**ONE**—you've got a maneuverable 600 cfm. Power Vane Rotary Compressor for a completely dependable air supply. Its oil injection system provides copious lubrication during off-level operation, yet oil consumption is low. A variable speed capacity regulator helps prolong engine life and reduce wear and tear.

**TWO**—you've got a rugged pair of CP Drill Arms.

Both booms are readily adjustable to any drilling position... vertical adjustments are made by a rotary air motor... lateral adjustments are rigidly held by air-actuated post locks. Automatic safety locks prevent boom arms from settling.

**THREE—and to top it all off**, mounted on the drill arms you've got two tubular CP drill carriages that provide all the rigidity and strength necessary to stabilize and feed the two hard hitting, strong rotating CP-70NDC Drifters. Write for details.



## Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

**TYPE F  
STEELFLEX  
COUPLING**



- Any Size
- Any Service
- Any Application, Horizontal or Vertical
- Always available

## The exclusive grid-groove design of **FALK Steelflex Couplings** protects your machinery in two ways

You get double protection when you connect your driving and driven machinery with a Falk Steelflex Coupling—the all-steel-built coupling with the exclusive grid-groove design! First, its torsional resilience smothers shock and vibration; and second, the Steelflex design prevents damage and lowered efficiency by accommodating shaft misalignment.

Why have increasing numbers of key men in industry standardized on Falk Steelflex Couplings? Their experience has proved that Falk Steelflex Couplings prolong the service life of their machinery...are trouble-free and need minimum maintenance...are easy to install, lubricate and disconnect...and cost less per year of service than ordinary couplings.

One basic Steelflex design—the Type F, in its many sizes—is adaptable to more than 90% of all industrial applications. This facilitates buying, as well as prompt replacing and servicing when necessary. Write to Department 247 for engineering bulletin, including selection and dimension details.

**THE FALK CORPORATION, Milwaukee 8, Wisconsin**

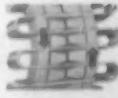
**MANUFACTURERS OF**

- Motorreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

### How shock and vibration are smothered by the FALK Steelflex Coupling's Torsional Resilience . . .

This cutaway view shows the sturdy all-steel construction, also the exclusive, torsionally resilient grid-groove design. Here is how the grid-groove design functions:

**UNDER LIGHT LOADS** The gridmember bears only at outer edges of grooves. The long span between points of contact remains free to flex under load variations.



**UNDER NORMAL LOADS** As load increases, the distance between supports on grooves is shortened proportionately, but a free span remains to cushion shock loads.

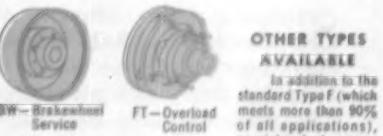


**UNDER SHOCK LOADS** Under extreme overloads, the gridmember bears fully on the grooves and transmits full load directly. The coupling remains flexible, within its rated capacity.



### SHAFT MISALIGNMENT ACCOMMODATED Free End Float Permitted

Controlled flexibility in the Falk Steelflex coupling provides compensation for parallel and angular shaft misalignment—and permits free end float for the shafts of the driving and driven members, or of either one.

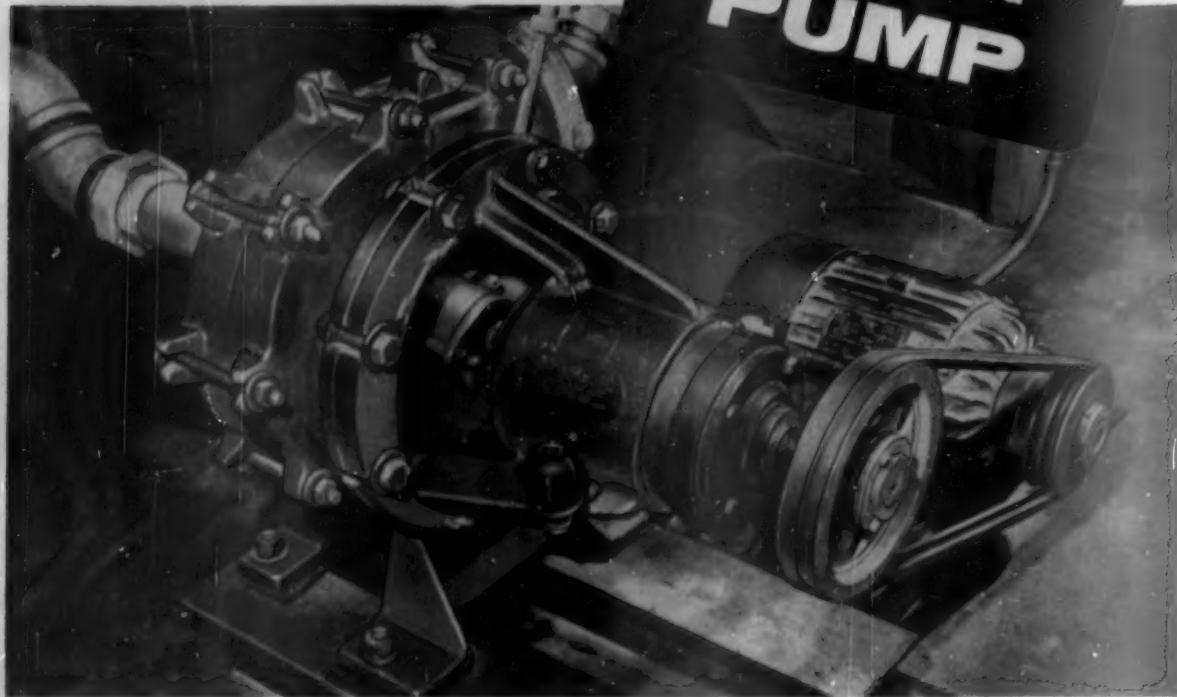


### OTHER TYPES AVAILABLE

In addition to the standard Type F (which meets more than 90% of all applications), special or dual purpose Steelflex designs are available for unusual applications. A few of the many types are shown here.

**FALK**  
...a good name in industry

Allis-Chalmers pump, motor, Texrope V-belt drive and motor starter operated by Georgia Coating Clay Co., at Macon, Georgia. By specifying A-C for all components you get coordinated design — the benefits of dealing with a single source for service and supply and having one reliable firm responsible for the complete unit.



## In 7 months' continuous duty... **NO MAINTENANCE**

**Georgia Coating Clay Co. uses A-C Rubber-Lined Pump  
to move highly abrasive clay slurry**

SINCE ITS INSTALLATION IN MARCH, 1954, this Allis-Chalmers Rubber-Lined Pump has been operating "round the clock," handling 17% to 36% clay slurry with pH ranging from 5.0 to 7.0. The previous pump required impeller replacement about every six weeks.

### **Long Life, Lasting High Efficiency**

With Allis-Chalmers Rubber-Lined Pumps you can make adjustment to maintain proper clearances between the impeller and the casing. This adjustment — which prolongs pump life and

efficiency — is merely a matter of resetting adjusting screws. Owners report A-C Rubber-Lined Pumps last from 10 to 50 times as long as hard alloy pumps.

### **GET ALL THE FACTS . . .**

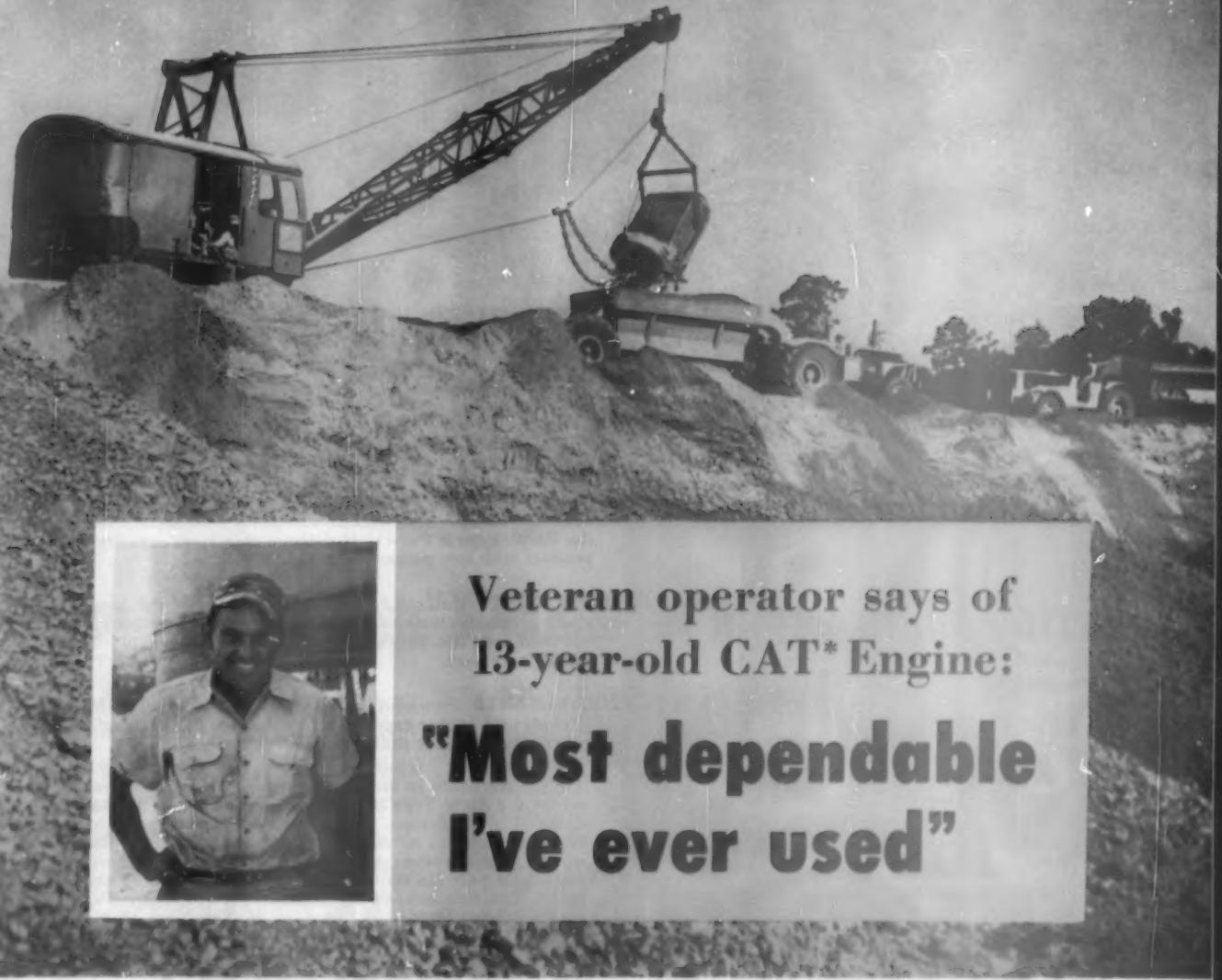
Find out how these new pumps help you maintain high output, cut maintenance, service and down-time costs. See your representative or write Allis-Chalmers, Milwaukee 1, Wis. Ask for Bulletin 52B8156.

A-4543

Texrope is an Allis-Chalmers trademark.

# **ALLIS-CHALMERS**





Veteran operator says of  
13-year-old CAT\* Engine:

## "Most dependable I've ever used"

"I've been with this machine for three years, and an operator for 16 years," says C. S. Batson, operator for Reynolds and Williams, Little Rock, Ark., "and Cat Engines are the most dependable I've ever used." He is shown here with a Northwest Shovel whose Caterpillar D13000 Engine is 13 years old.

The shovel loads out five Caterpillar DW10s and W10 Wagons, 20 loads of base gravel per hour, for an 11-mile stretch of State Highway No. 4 near Little Rock. In one 21-day period, the company put down 35,000 cu. yd. on this stretch. The shovel strips topsoil for three hours, and then loads gravel for 10 hours every day. Output is 360 cu. yd. of topsoil and 1800 cu. yd. of red clay gravel daily.

That's high production for a shovel whose engine is a veteran of more than 40,000 hours. All Caterpillar Diesels are built to deliver many thousand hours of economical, pamper-free performance, thanks to such features as specially hardened crankshaft journals and long-lived aluminum alloy bearings. Really efficient filters and seals protect every engine's factory-built precision, even in abrasive dust working around

rock. Important in cutting costs is the ability of every Caterpillar Diesel to deliver full and *foul-free* power on inexpensive No. 2 furnace oil.

There are 12 sizes of Caterpillar Engines and Electric Sets, to 500 HP and 315 KW. Leading manufacturers can supply Caterpillar power in their excavators, compressors, with rock crushers and other machinery. Your Caterpillar Dealer — who provides fast service and genuine factory parts — can help you select the Cat power unit that will do most work at lowest cost for *you*. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

# CATERPILLAR\*

\* Both Cat and Caterpillar are registered trademarks—B

SPECIFY CAT POWER  
FOR HIGH-PROFIT  
PERFORMANCE

# OUT

## RAW GRINDING COSTS

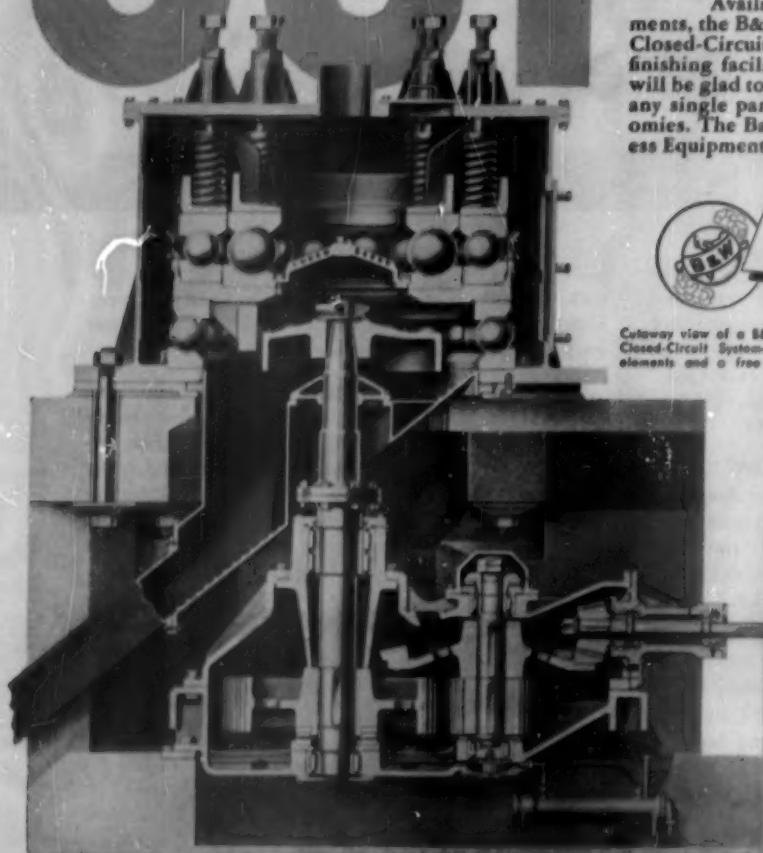
with  
**B&W Type B Pulverizers**

**POWER DEMAND** With grinding elements operating on the ball-bearing principle and with an extremely low friction loss, the B&W Type B Pulverizer delivers maximum capacity of product with low power demand.

**MAINTENANCE COSTS** Uniform, self-equalizing wear of the tough, alloy, grinding elements assures low maintenance throughout their long life. Easy access facilitates replacements when finally necessary.

**SPACE REQUIREMENTS** Powerful yet compact, the Type B Mill provides far higher capacity in equal space . . . can replace other types without additional structure.

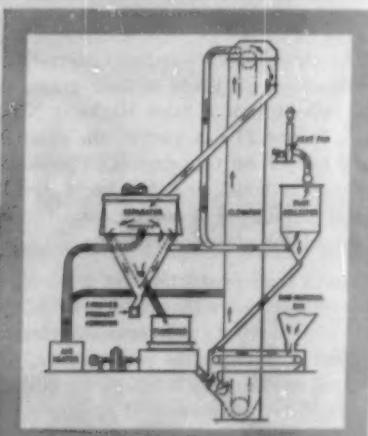
Available in sizes suitable to all capacity requirements, the B&W Type B Pulverizer is the heart of the B&W Closed-Circuit System. If you plan to expand your rock finishing facilities or modernize present equipment, B&W will be glad to discuss your plans—from first to last grind or any single part—in terms of increased raw grinding economies. The Babcock & Wilcox Company, Boiler Div., Process Equipment Dept., 161 East 42nd St. New York 17, N. Y.



**BABCOCK  
& WILCOX**

Cutaway view of a B&W Type B Pulverizer—heart of the B&W Closed-Circuit System—which employs three sets of grinding elements and a free gravity discharge.

Diagrammatic arrangement of equipment in typical B&W Closed-Circuit Drying and Grinding System.



C-204



One of approximately 1200 on the Minnesota Iron Range, this 34-ton "Euc" is loaded by a 5 cu. yd. shovel of a large open pit operation. Rear-Dump models are available with semi-rigid or spring mounted axles, Allison Torqmatic drives and transmissions, or conventional 3 and 10 speed transmissions.

## More Profit with "Eucs" in Mines and Quarries

■ Built for tough off-the-highway service, Rear-Dump and Bottom-Dump "Eucs" and Euclid Scrapers are cutting the cost of moving ore and overburden, sand and gravel, and stone on quarry and mining operations. Big payload capacity, fast travel speed and high job availability add up to more loads per hour and lower cost per ton or yard hauled.

■ Your Euclid Distributor will provide a hauling production and cost estimate for your operation . . . there's no obligation so get in touch with him soon. Have him show you how Euclid equipment can improve your profit picture.



This Bottom-Dump "Euc" is being loaded with 17 cu. yds. of sand and gravel from an overhead hopper for haul to the washing plant. Owner is Interstate Sand and Gravel of Covington, Ohio.



Ideal Cement Co. of Portland, Colorado uses 22-ton Rear-Dumps with quarry bodies to haul stone from the face to the crusher. Top speed of this Model 36 TD, with full payload, is 32.5 m.p.h. Spring mounted drive axle and Allison Torqmatic drive and transmission are important factors in stepping up production and profits at this quarry operation.



Euclid Twin-Power Scraper stripping overburden at a large gypsum quarry in Iowa. Powered by two 190 or 200 h.p. engines with torque converters and semi-automatic transmissions, this "Euc" self loads, has a struck capacity of 18 cu. yds. and travels up to 30 m.p.h. with full payload.



# Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



If you use filter systems...

## CHECK THESE MULTIPLE ADVANTAGES

OF THE REVOLUTIONARY,

# Dualaire\*

New  
DUST COLLECTOR!

No pressure surges!

No filter choking!

Efficiencies up to 99.99%!

### Why The DUALAIRE Is Better!

Here's the heart of the DUALAIRE principle. Gas enters through top of filter tube (A). Dust is filtered out along length of filter surface and as it begins to build up (B), the slight change in differential pressure causes the reverse-jet blow ring to go into operation. This ring fits tightly around the filter tube and concentrates a jet of air (C) that blows from the outside inwardly through the filter fabric (D).

As the ring moves up and down the tube, the fabric is flexed and blown at the same time, thus lessening the dust in small portions. The blow ring travels up and down the filter tube until the filter is clean, then automatically stops until the tube again requires cleaning.

Cleaning action is uniform and steady. There are no sudden pressure surges as filter surface is cleaned — no destructive rapping or jarring operations to shorten life of filter element — no wide variations in gas flow or plant efficiency!

If you use bag-houses or other similar collecting systems in your plant operations, be sure to investigate the many vital advantages built into Western Precipitation's new DUALAIRE Dust Collectors. Backed by the same well-known organization that pioneered commercial application of COTRELL Electrical Precipitators and MULTICLONE Mechanical Collectors, DUALAIRES bring entirely new performance and efficiency standards to filter-type collection systems.

As outlined at the left, heart of the DUALAIRE is a reverse-jet blow ring that travels up and down the cloth filter tube, keeping it clean without the alternate choking and pressure surges characteristic of conventional rapping, vibrating, or jarring systems of cleaning off the collected dust. Result—

► **UNIFORMLY LOW PRESSURE DROP** is assured, because the collected dust is removed steadily and in small increments — not by sudden surges!

► **UNIFORMLY HIGH EFFICIENCIES** — as high as 99.99% under actual field conditions — are maintained by the constantly-cleaned filter surfaces. There is no "choking" action — no variation in filter efficiency as dust accumulates!

► **LONGER FILTER LIFE** is obtained because the filter fabric is not subjected to destructive jarring, rapping and vibration of conventional filter cleaning methods. The Dualaire cleaning action is gentle — yet far more effective!

► **LESS EQUIPMENT IS REQUIRED** to handle a given capacity with the Dualaire because no standby sections need be provided for gas cleaning while other sections are shut off for rapping.

The Dualaire filter is kept constantly clean — automatically — while it is filtering out the suspensions. The gas is filtered and the dust removed simultaneously — without interruption. Saves space, simplifies installation!

► **MAXIMUM ADAPTABILITY** to varying installation requirements is assured by the "sectionalized" design of the Dualaire. Each section is available in 5 different heights — and as many sections can be bolted together as desired to meet plant requirements. As needs increase, simply add more sections!

► **EFFICIENT STRAIGHT-THRU DESIGN** of filter tubes assures easier dust recovery, better flow. Dirty gas enters top of tube, is filtered through the walls, and dust drops by gravity through bottom of tube into collection chamber. Separated material does not re-entrain in the gas flow.

WESTERN  
**Precipitation**  
CORPORATION

DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR  
COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL



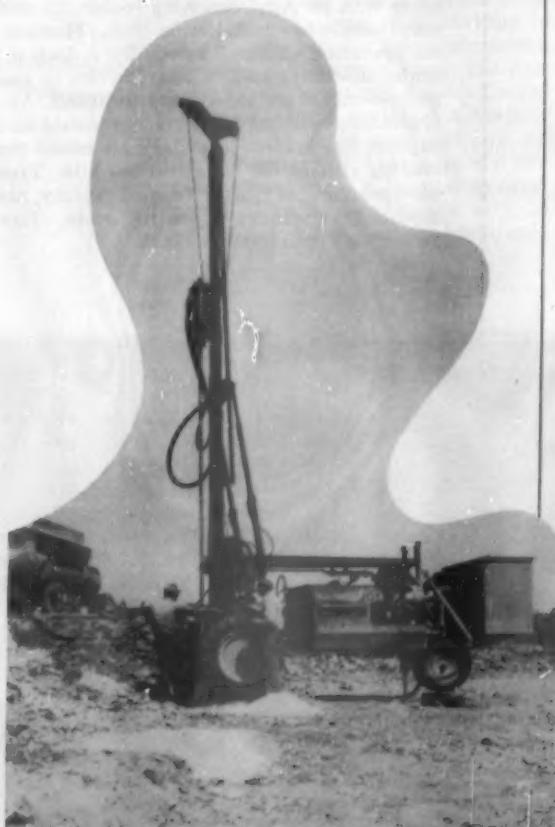
There are many other advantages built into the DUALAIRE. For further details send for this descriptive 12 page booklet. Or contact your nearest Western Precipitation representative!

"Dualaire" & "Multicloud" ®

Licensed by H. J. Harney, Jr.

# THIS JOY CHALLENGER REPLACED FOUR WAGON DRILLS

QUARRY INCREASES PRODUCTION 600 YDS. A DAY  
IN SWITCH TO JOY TM-500 CHALLENGER DRILL



*Consult a Joy Engineer*

FOR STATIONARY AND PORTABLE COMPRESSORS • ROCK DRILLS • ROCK BITS • ELECTRICAL CONNECTORS • PORTABLE LIGHTING LINES

#### OVER EIGHT YARDS OF ROCK PER FOOT OF HOLE

... That's the production rate of the Joy Challenger on this quarry job.  $3\frac{1}{2}$ " holes, in a 17' x 13' pattern, were drilled to depths of 30'.

#### ONLY ONE-AND-A-THIRD YARDS FOR THE WAGON DRILLS

The footage per day with the Challenger averaged 275 ft. The wagon drills ... with smaller, shallower, less productive holes in a closer pattern ... averaged only slightly more—300 ft.

#### CHALLENGER GETS OVER 2200 YARDS A DAY

Compare that with the four wagon drills which were able to produce a bare 1600 yards a day ... less than 75% of the Challenger's output.

#### SELF-PROPELLED CHALLENGER SETS UP FAST

The  $5\frac{1}{4}$ " TM-500 Challenger Hammer Drill features powerful blowing action and rotation. Hydraulic control of mast and leveling jacks gives fast, easy setups.

#### BULLETIN 87-U GIVES COMPLETE DETAILS

Write for your free copy, today, to **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.** In Canada: **Joy Manufacturing Company (Canada) Limited, Galt, Ontario.**

# JOY

WED 08474

CONSTRUCTION EQUIPMENT MANUFACTURERS  
FOR OVER HALF A CENTURY



*...For More*

1

**INSTALL AN  
AIR-QUENCHING COOLER**

You'll get greatly reduced rotary kiln fuel costs with an Air-Quenching cooler . . . and surprisingly low installation costs. Horizontal operation eliminates need for a deep pit under discharge end. Cooler arrives in two pre-assembled sections. Easy to install. Air-Quenching shaking grate coolers isolate and capture the hottest secondary air above the cooling clinker for return to the kiln. True air-quenching of clinker (cooled rapidly, not gradually) reduces grinding costs. Low power and maintenance costs.

Get complete facts on cement plant modernization from the Allis-Chalmers representative in your area. Also send for Air-Quenching Cooler Bulletin 67B7869 and Bulletin 07B8040 on Air-Cooled Kiln Ends. Allis-Chalmers, Milwaukee 1, Wis.

# 3 WAYS You Can Modernize Your Plant

## *Profitable Cement Production!*

**2**

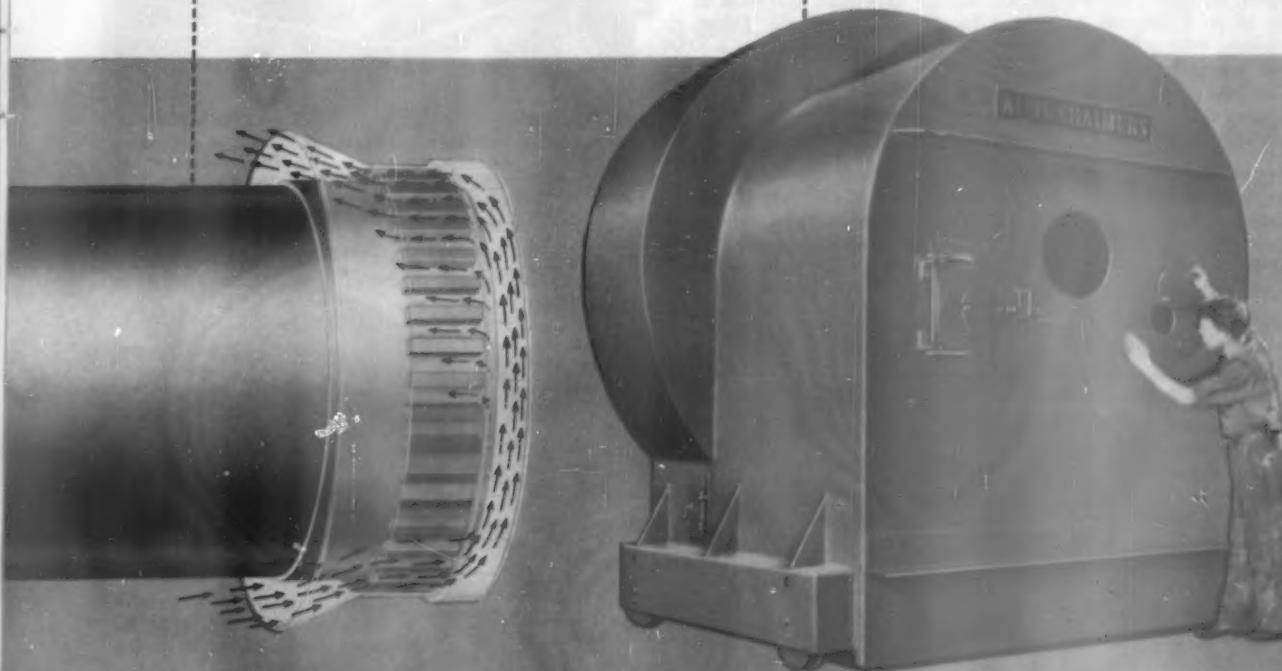
### INSTALL AN AIR-COOLED DISCHARGE END

This modernization improvement will actually pay for itself in 2 to 3 years in refractory savings alone! Big savings in downtime, too, because fewer shutdowns are required to replace end brick. You gain valuable production time. An Air-Cooled discharge end helps maintain a positive air seal between firing hood and kiln, resulting in fuel savings. Discharge end distortion is eliminated. Kilns now in operation can be modernized easily with an Allis-Chalmers Air-Cooled discharge end.

**3**

### INSTALL A MOBILE FIRING HOOD

Another profitable way to modernize — an Allis-Chalmers movable firing hood will maintain an excellent air seal with the kiln, saving fuel by reducing hot air loss at kiln end and keeping out infiltrating cold air. Movable design compensates for expansion and contraction of kiln shell. Allis-Chalmers firing hoods are built to use standard refractory brick lining. They're heavily constructed, to stay rigid throughout years of service, and have convenient access and inspection openings.



A-4427

# ALLIS-CHALMERS



# Large Western Sand Producer uses **WEMCO** SAND PREPARATION MACHINES in six major plants



KERLINGER — Two No. 48 Wemco Sand Preparation Machines, with capacity of 60 TPH each, used for desliming and dewatering.



CENTERVILLE — Two No. 48 Wemco Sand Preparation Machines, with capacity of 60 TPH each, producing concrete specification sands.



FAIR OAKS — Two No. 48 Wemco Sand Preparation Machines, each with 75 TPH capacity, used for preliminary washing of minus 1½" aggregate.

For producing clean specification sands, Pacific Coast Aggregates, Inc. has installed Wemco Sand Preparation Machines at six of its California producing locations — Centerville, Elliott, Lindsay, Yolo, Kerlinger and Fair Oaks. From its various producing areas, Pacific Coast Aggregates supplies San Francisco, Oakland and other Northern California areas. The company is among the country's largest sand producers.

The Wemco machines used at these plants are efficiently designed for high sand production. Large settling tank and wide weir overflow are features which assure accurate control of separation. Over a wide range of dewatering or desliming conditions, Wemco units provide for maximum or controlled retention of fines with rejection of materials deleterious to production of specification sands.

#### WEMCO SAND PREPARATION MACHINE

- Modern design — for greater sand production
- Large settling tank — wide overflow weir
- Sharp separation — for specification production
- Good drainage — for dry, clean sands
- Minimum moving parts — for lowest operating costs



If you're interested in specification sands that sell, write today for further information on the Wemco Sand Preparation Machine.

# WEMCO

WESTERN MACHINERY COMPANY

1740 17th ELDOR STREET SAN FRANCISCO 7, CALIFORNIA

#### PRINCIPAL OFFICES

Birmingham • Toronto, Canada • Jeffersonville, Indiana  
San Francisco • Sacramento • Salt Lake City • Spokane  
Denver • Phoenix • Chicago • Hibbing, Minnesota • New York

#### OTHER WEMCO PRODUCTS

Mobil-Mills • Cool Spirals • HMS Thickeners • HMS Pumps  
Sand Pumps • Cone Separators • Drum Separators • Densifiers  
Hydroseparators • Fagergren & Steffensen Flotation Machines  
Dewatering Spirals • S-H Classifiers • HMS Laboratory Units  
Attrition Machines • Fagergren Laboratory Units • Conditioners  
Agitators • Thickeners



Down time is no joke. The best way to avoid it is to insist on *genuine CAT®* parts every time. That's the only way to be sure of getting parts that are made to the latest design, precisely manufactured of the right materials, rigidly inspected and tested.

**Take these two fuel injection pumps, for example.**

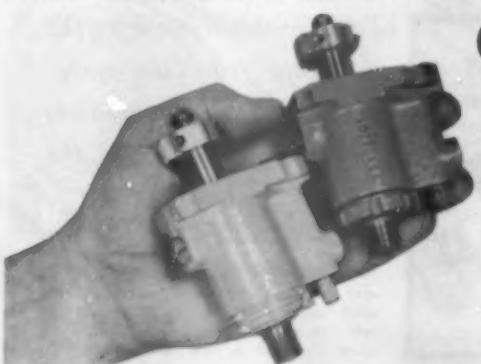
They look alike. The genuine part is Caterpillar-built: plunger and barrels of finest ball-bearing type steels, the clearance between them held to 25-millionths of an inch, the finished pump pre-set and tested at the

factory, calibrated for use interchangeably with different cylinders in different engines. The substitute part: who can be sure?

The difference on the job: with all-Caterpillar fuel injection equipment you get simplicity and reliability, the ability to burn low-cost non-premium fuels, interchangeability of parts, easy maintenance, long life. With substitute parts: who can be sure? **Better get genuine Caterpillar parts every time.**

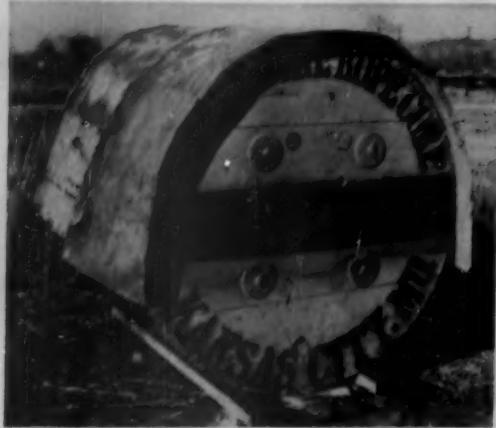
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

# CATERPILLAR\*

\*Both Cat and Caterpillar are registered trademarks—C.


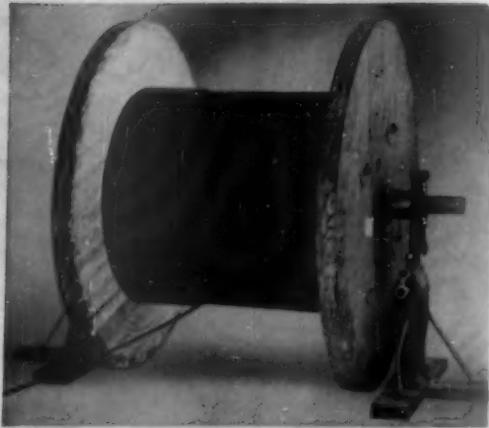


# Tuffy® tips on getting



## Store Rope Like This

Keep spare rope in a dry, sheltered place free of dust, vapors or fume-laden air. If stored out of doors, set reel on blocks off the ground. Clear away weeds and grass and protect with a waterproof covering as shown. Check each month for rust caused by moisture collecting on the rope. Paint with a heavy crankcase or cylinder oil if rust is discovered or even before it shows up if moisture is present.



## Unwind Like This

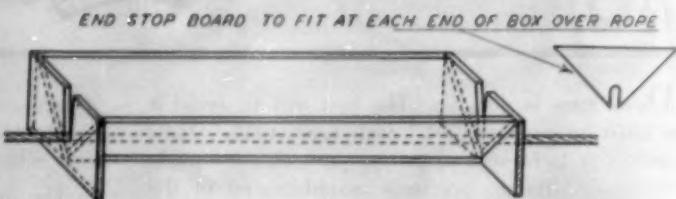
When getting ready to install the rope, special care should be taken to see that the reel is set up for smooth, easy unreeling. Set reel up on jacks as shown above and unreel so the rope pulls off from the bottom of the reel—not from the top. Coils should be put on a swift or rolled on the ground to pay off the rope. Kinks or "doglegs" may result from incorrect unreeling, seriously damaging wires of the rope and greatly reducing the ultimate life.

## Always Keep Rope Lubricated

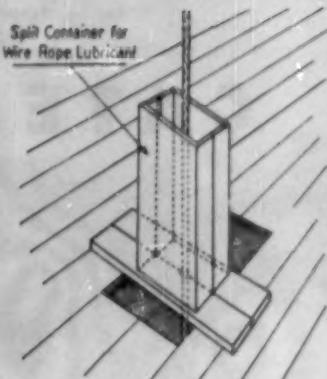
**Rope That Is Stored** for long periods of time should be lubricated during installation. If it is not possible to lubricate stored rope very often, apply a sealing compound to hold the lubricant that is already present.

**Rope In Use** can be lubricated most economically without removing it from the equipment on which it is operated. Lubricate rope as often as it needs it—service conditions determine the frequency.

**Use Lubricant Hot or Cold**, depending on its penetrating qualities. Your local oil company engineer will be able to recommend an oil that will actually penetrate to the working parts of the rope, and not just form a coating that peels off the first time your rope runs through a sheave.

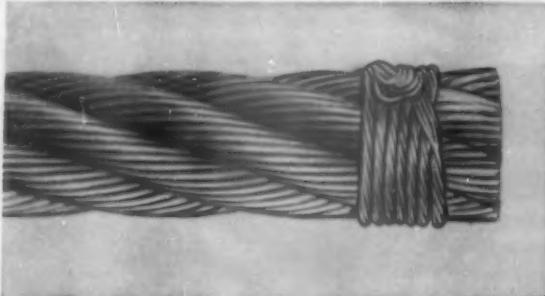


## Two Home-Made Oiling Devices



*These two oiling devices can be used without removing the wire rope from the equipment on which it operates. One is for vertical ropes, the other for horizontal ropes.*

# extra service from *WireRope*



## Seize Tightly For Cutting

Cutting can throw the strands out of fabricated position and, in time, result in kinks or doglegs. Seizing the rope securely before cutting, as shown above, assures that no movement of the strands can occur when you make cuts. Because most ropes are now preformed, and stress free, only one seizing wire at each side of the cut is needed.



## Attaching By Clipping

The fittings you use on wire rope can handicap it or enable it to work at full efficiency. Fittings which derive holding power by crimping action are harmful to the rope. Shown here are two rope clamps. One is a combination clamp and thimble. Both provide snug saddling of the rope and grip larger and uncrimped bearing surfaces so tightly that the loads are carried almost solely by the force of friction.

## Available To You: The *WireRope* Experience of Specialists

Working with users to whip wire rope problems has provided Union Wire Rope engineers a wealth of on-the-job experience. Out of this priceless experience has come a family of wire ropes for special purposes.

Into them is put the grade of steel, the rope construction and operating characteristics which laboratory research and field development have proved best for the particular purpose for which made.

## Forget Complicated Specifications-Say **Tuffy**



### Tuffy Scraper Rope

Special construction ensures resistance to drum crushing and the strains caused by angle pulls through swivel-mounted sheaves, rapid line and shock of load on slack line.



### Tuffy Dragline

Outer wires offer large area to resist abrasion . . . inner structure made for flexibility. The result is a rope that casts freely, fights off shocks and line pulls.



### Tuffy Dozer Rope

Get extra dozer rope service—mount a 150' reel of Tuffy on your dozer, feed through only enough to replace damaged section on the drum.  $1\frac{1}{2}$ " and  $9/16$ ".



### Tuffy Slings & Hoist Line

Machine braided slings that consistently keep costs down, keep safety records clear. A tough, flexible hoist line. A balanced team.

## Your Tuffy Distributor Works to Learn Your Business

When new equipment comes out, he has already checked into it . . . finding out why it does the job better, how it works. Why? Because he's interested in earning your continued patronage. And part of that service is helping you out with fast answers when you need them—especially right answers to your wire rope problems. Give him a call.

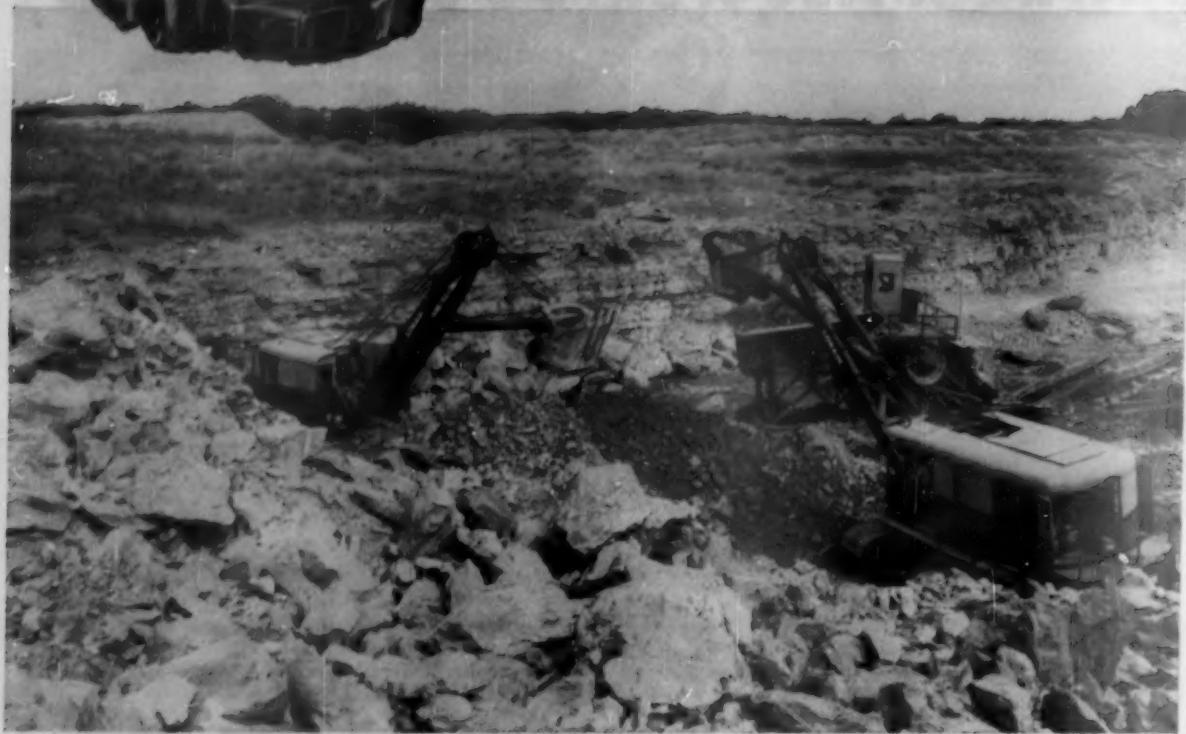
**union**  **WireRope CORP.**

2156 Manchester Avenue Kansas City 26, Missouri

I-C Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric

# ROCK!

# 2000 TONS PER DAY!



**PERRY JONES CONSTRUCTION CO.** of Carbondale, Kansas, operates the Stull Quarry, near Lawrenceville. The daily average of 2,000 tons of crushed limestone is produced in 9 hours. Backing up that steady production pace are the two 2-yd. Lorain Shovels, model 820-K, which are shown in the photo. Working against an 18-ft. face, these two Lorains keep the Jones portable crushing plant going at top speed.

**IN ROCK!**

The Hydraulic Coupling power take-off (fluid drive) pays big dividends. Digging shocks that are unavoidable in every digging operation just can't be transmitted to the mechanism and cables because the Hydraulic Coupling absorbs and smoothes them. Machine life is lengthened, service and maintenance are reduced. Because of the Hydraulic Coupling, the engine will "hang-on" until the toughest rock is in the dipper. You can't stall the engine under even the toughest digging circumstances.

**IN ROCK!**

of these 3 operations or  
to 2 or 3 simultaneous  
and synchronized operations... a  
tremendous advantage in tough digging. Air-assist controls  
add ease to moving more rock.

**IN ROCK!**

two travel speeds in both directions, a 4-way, tread-travel lock and rugged, heat-treated, drop-forged treads... and there are air controls for steering, crawler tread lock and turntable jaw clutches for improved operator efficiency and ease of operation. See your Thew-Lorain Distributor today!

THE THEW SHOVEL CO., LORAIN, OHIO

# THE LORAIN. 820

THE TOUGHER THE DIGGING — THE MORE REASON WHY  
YOU SHOULD SEE YOUR THEW-LORAIN DISTRIBUTOR

# Why this feeder doesn't cave in

• The reason is simply this: The PIONEER-ORO Feeder is the most rugged feeder ever built.

Take a look at its massive pans... cast from a special wear-resistant manganese steel, heavily ribbed, reinforced, and all the way from  $\frac{3}{16}$ " to 1" thick, depending on width of feeder. The pans are supported by heavy, closely-spaced manganese steel rollers, keyed 3 to a heavy diameter shaft. Each shaft turns in 3 heavy-duty bearings rigidly supported on the feeder frame.

## Takes heaviest dump loads

The PIONEER-ORO is designed for the roughest, toughest feeding jobs on earth. It withstands the impact of the heaviest dump loads. It shrugs off abrasion from hard ores, slag, flintrock, granite, and other coarse, heavy materials.

But the mighty PIONEER-ORO offers more than sheer, brute strength. It is a smooth-running, finely engineered unit designed to deliver a constant flow of heavy, abrasive material, with a minimum of maintenance. Even preventive maintenance costs are low.

## Rivetless pans overlap and interlock

Pans, for example, overlap and interlock to provide added stability and stop leakage and spilling. Upturned end flanges also reduce loss of material. Drive links are cast as an integral part of the pan, so there are no bolts or rivets that can loosen. Easily replaced link bushings need no lubrication.

Sprocket teeth are readily reversed or replaced without taking the sprocket hub from the shaft or even disconnecting the pans. Like all other wearing parts, these teeth are cast from special wear-resistant manganese alloyed steel.

Supporting rollers and shafts can be removed, too, without disturbing the pans.

## OTHER FEATURES

- Patented lugs in pan links remove dirt, make links self-cleaning.
- Feeder can be made to run in either forward or reverse direction.
- Available in standard widths up to 84", widths in excess of 84" by special order, and lengths as required.
- Made with 6", 9", 12" or 15" pan pitch (depending on width) to fit available head room.

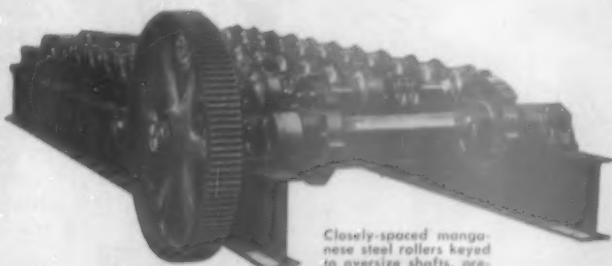
## PIONEER-ORO FEEDER

Capacities in tons per hour

Travel per Min.	Width of feeder						
	30"	36"	42"	48"	60"	72"	84"
10'	74	108	147	192	300	432	508
15'	112	162	222	289	450	648	888
20'	148	216	294	384	600	864	1176
25'	186	270	368	482	730	1080	1472
30'	223	324	442	577	900	1296	1768

## Ask Your Feeder Salesman These Questions

- Are pans made from special manganese steel? How thick?
- Are pans and links cast together so they are rivetless?
- Can manganese parts be replaced without disassembling pans?
- Will pans support themselves without rollers?



Closely-spaced manganese steel rollers keyed to oversize shafts prevent sagging and distortion of pans.



Note the turned-up and flanges and corrugated surface of heavy-interlocked pans; also absence of rivets.

For further details and specifications regarding full line of PIONEER Feeders, write Pioneer Engineering Works, Inc., Minneapolis 13, Minn. (subsidiary of Poor & Company, Chicago) or see your nearest PIONEER Distributor.



# Pioneer

Continuous EQUIPMENT

Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.  
Subsidiary of Poor & Company • Chicago

Please send information on equipment checked.

<input type="checkbox"/> GRAVEL PLANTS	<input type="checkbox"/> WASHING PLANTS	<input type="checkbox"/> MECHANICAL FEEDERS
<input type="checkbox"/> ROCK PLANTS	<input type="checkbox"/> RETURNING PLANTS	<input type="checkbox"/> VIBRATING SCREENS
<input type="checkbox"/> JAW CRUSHERS	<input type="checkbox"/> APRON FEEDERS	<input type="checkbox"/> BUZZER SCREENS (LIGHT DUTY)
<input type="checkbox"/> ROLL CRUSHERS	<input type="checkbox"/> DRY FEEDERS	<input type="checkbox"/> CONTINUOUS CONVEYORS

Name \_\_\_\_\_

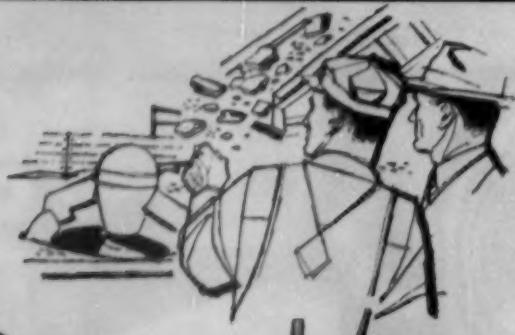
Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# CUT CRUSHER DOWN-TIME

*with Custom-Engineered*



ALLIS-CHALMERS  
**CONTROL**

Allis-Chalmers has built and installed hundreds of gyratory crushers in the past 75 years. Drawing on this experience, A-C engineers have developed a control circuit designed to cut costly down-time in the rough-tough job of rock and ore crushing. This control circuit is considered by rock products operators to be the ultimate in control and protection for wound-rotor motors driving primary gyratory crushers. Here are some features of this circuit:

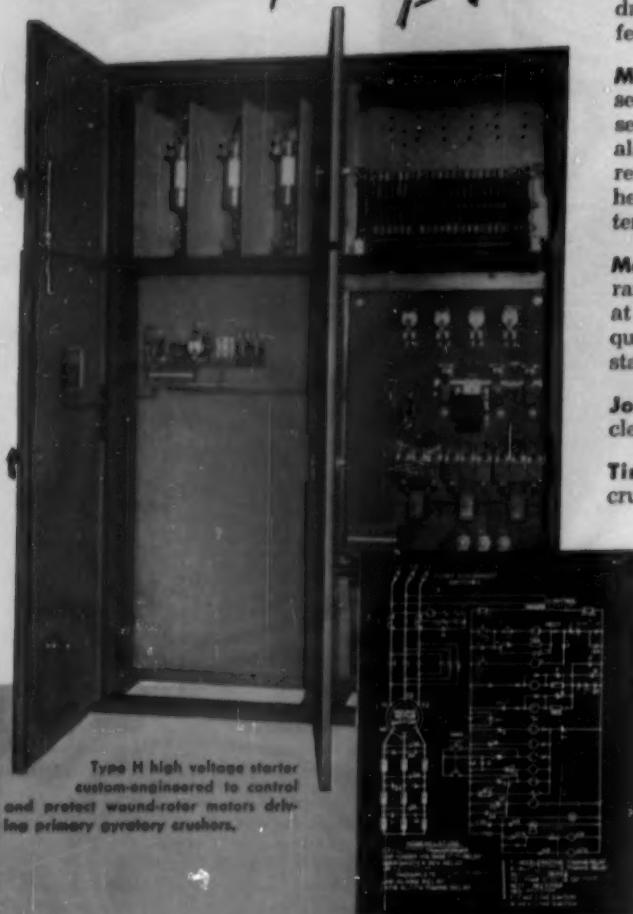
**Motor Overload Protection** — Two separate sets of thermal overload relays are provided. One set operates on slightest overload to sound remote alarm horn and energize indicating light. These relays do not stop motor. If warnings are not heeded, a second set of relays stops motor when temperature reaches danger point.

**Maximum Torque Starting** — Control is arranged so that maximum torque can be obtained at any time while motor is being started. Frequently, application of maximum torque permits starting a stalled crusher and clearing jam.

**Jog-Reversing Controller** permits rocking to clear jam.

**Time-Delay Undervoltage Relay** allows crusher to ride through momentary voltage dips.

**Stall Protection** — On currents greater than normal load peaks, the motor is disconnected through an instantaneous current relay.



Type H high voltage starter  
custom-engineered to control  
and protect wound-rotor motors  
driving primary gyratory crushers.

**Write for details.** Explanatory material is yours for the asking. See your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4525

## ALLIS-CHALMERS





# NEW CHEVROLET TRUCKS

**engineered and designed  
with your profit in mind!**

Everything about these new Chevrolet trucks spells **profit!** Their low cost, their stamina and dependability, even their traditionally higher resale value!

#### COST LESS TO BEGIN WITH

That's right, Chevrolet brings you America's lowest-priced line of trucks—so you save right from the start. The beauty of it is, you go right on saving! With the high compression ratio of Chevrolet's three great engines, you register more miles on the job for each tankful of gas. You can count on fast starts; easy pulling up steep grades. You stay on schedule and keep the profits coming in *on time!*

#### COST LESS TO MAINTAIN

That's because of the rugged strength and stamina engineered into every new Chevrolet truck. They stay on the job longer (actual owner reports prove it!), cutting your maintenance costs right to the bone. Look over the many advance-design features in the next column and you'll begin to see why.

Your best bet is to talk trucks with your Chevrolet dealer. He'll tell you all you want to know about these Chevrolet profit-makers! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

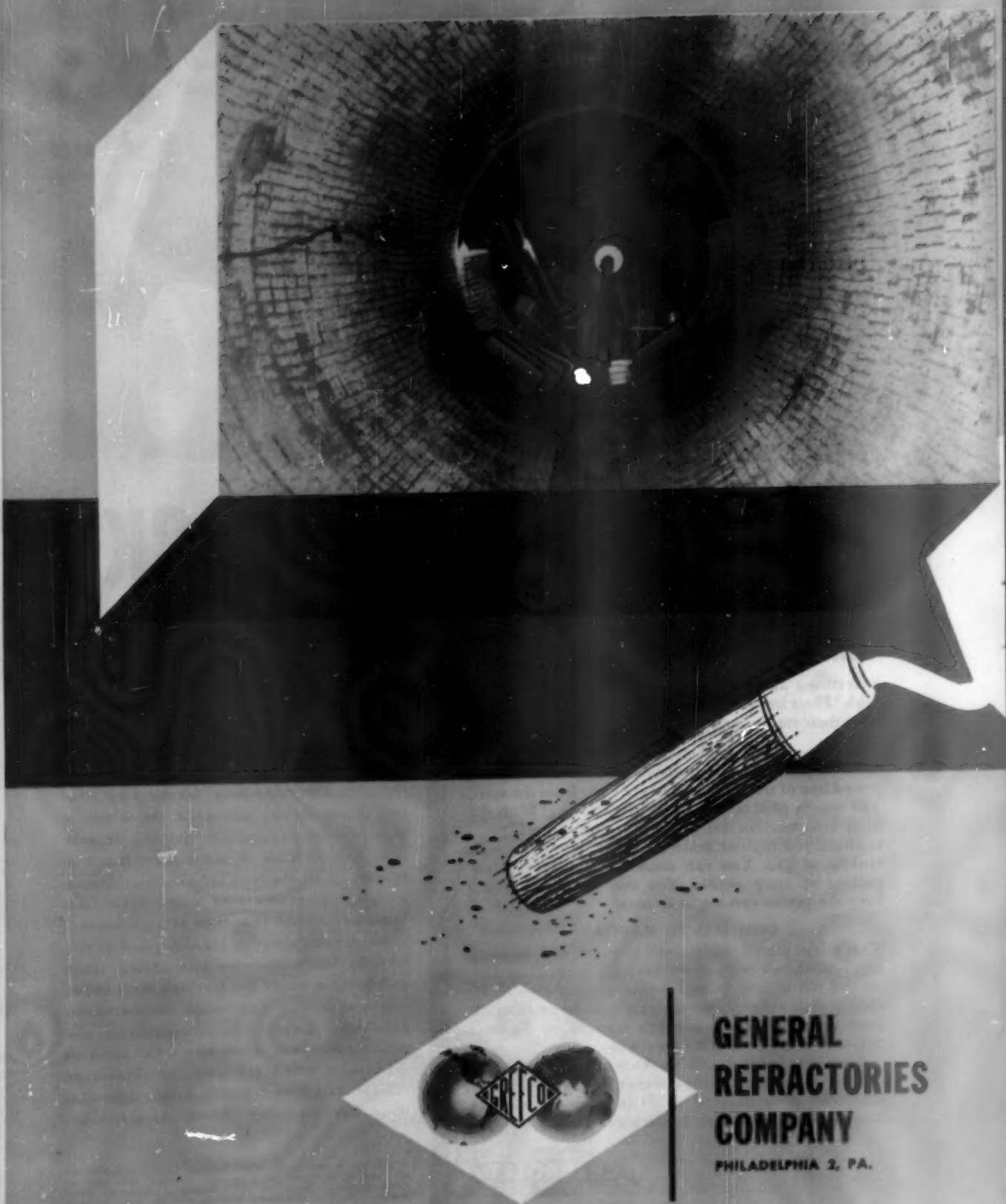


ROCK PRODUCTS, January, 1955

#### CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

**THREE GREAT ENGINES**—The "Jobmaster 261" engine\* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **TRUCK HYDRA-MATIC TRANSMISSION**\*—offered on  $\frac{1}{2}$ -,  $\frac{3}{4}$ - and 1-ton models. **Heavy-Duty SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—positive-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **RIDE CONTROL SEAT**\*—eliminates back-rubbing. **LARGE UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give trip-saving load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, hand-some appearance.

\*Optional at extra cost. Ride Control Seat is available on all cabs of  $1\frac{1}{2}$ - and 2-ton models, standard cabs only in other models. Jobmaster 261" engine available on 2-ton models, truck Hydra-Matic transmission on  $\frac{1}{2}$ -,  $\frac{3}{4}$ - and 1-ton models.



**GENERAL  
REFRACTORIES  
COMPANY**

PHILADELPHIA 2, PA.

*A Complete Refractories Service*

Workmen installing a total of two hundred and eighteen feet of General Refractories GR-23 Insulating Fire Brick in a 12 foot diameter cement kiln.\*

# GR-23 INSULATING FIRE BRICK

for exposed rotary kiln lining . . .

General Refractories Company has sold insulating fire brick for exposed lining in cement kilns from Maine to Mexico, from California to Puerto Rico.\* The initial installation was not made until after General Refractories research indicated its success. It is still in service after five years. Write for full information.

\*Names and locations on request

GENERAL  
REFRACTORIES  
COMPANY

# 25% Savings in Hauling Time with WHITE Mustang Power Speeds San Diego Aqueduct



**TOUGH** hauling job? No doubt about it . . . for giant concrete and steel pipe sections for the San Diego Aqueduct weighed 11 tons each and had to be moved over rough terrain . . . fast!

Whites did the job in 11 months instead of 15 and performed with dependable, production-line efficiency to speed construction of this important new water supply for Southern California.

Another outstanding example of *more* work done . . . in *less* time . . . at *lower* cost with White Trucks tailored to exact operating conditions.

## RIGHT to your own needs!

**WHITES** will do more work because they are engineered for it . . . under your own operating conditions. Get all the facts from your White Representative . . . today!

**WHITES** go cross-country . . . Over make-shift roads . . . Up steep grades . . .

*with Mustang Power!*



This fleet of ten White six-wheelers with 183 horsepower Mustang Engines is owned by Keith Williams Company, Riverside, California. Rugged, quality features give the Whites more hauling power and greater work capacity under all operating conditions.

**White**

THE WHITE MOTOR COMPANY • Cleveland 1, Ohio

THE WHITE MOTOR COMPANY OF CANADA LIMITED

Factory at Montreal

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

# ROTARY KILNS

F. L. SMIDTH & CO.

*Engineers and Machinery Manufacturers*

11 West 42nd Street • New York, N.Y.

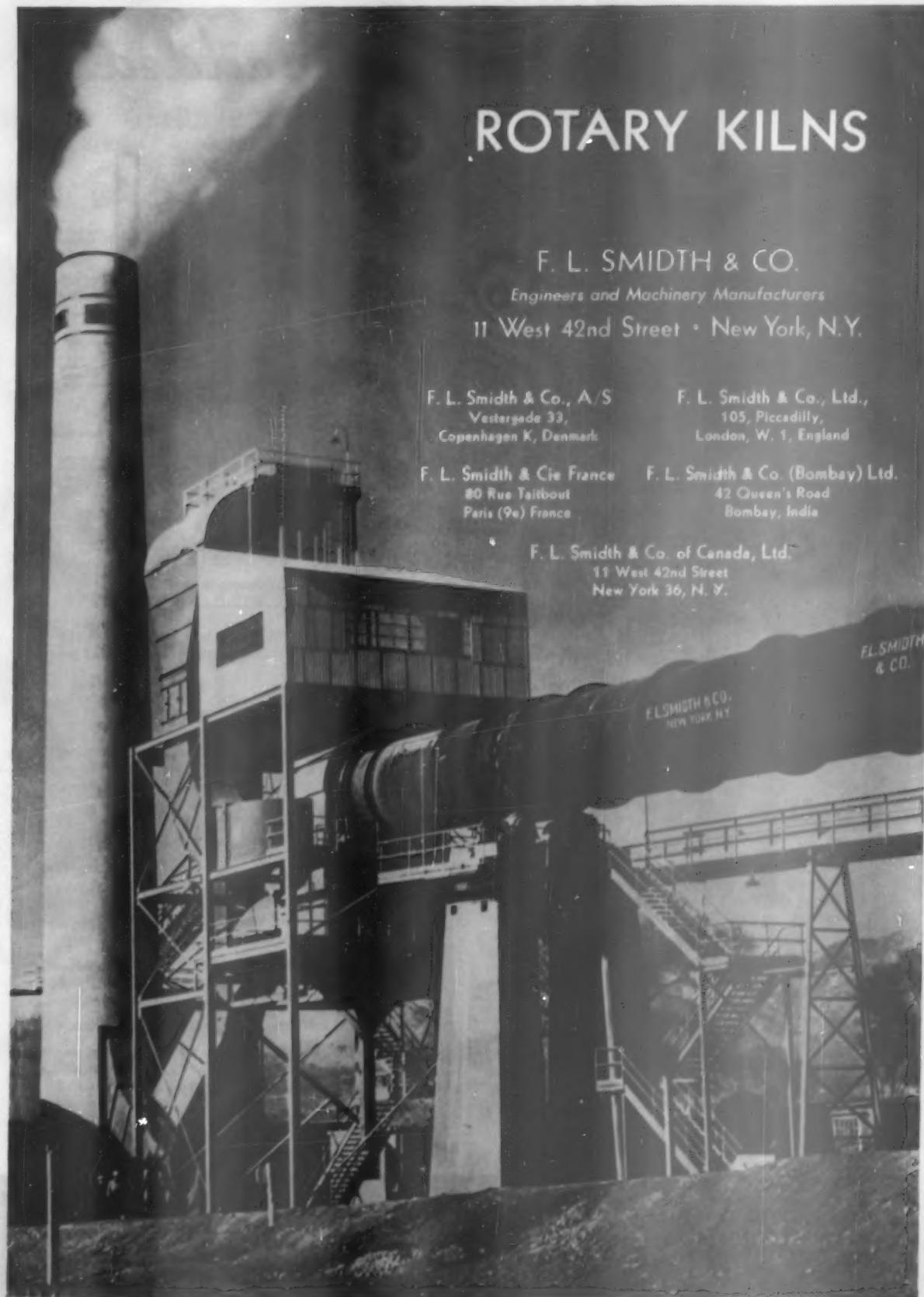
F. L. Smidth & Co., A/S  
Vestergade 33,  
Copenhagen K, Denmark

F. L. Smidth & Co., Ltd.,  
105, Piccadilly,  
London, W. 1, England

F. L. Smidth & Cie France  
80 Rue Tailbaut  
Paris (9e) France

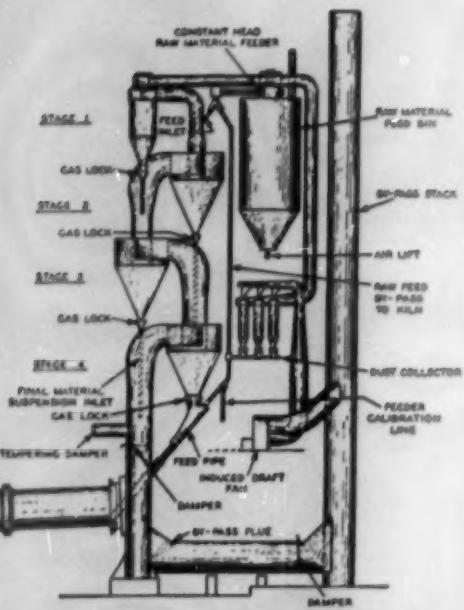
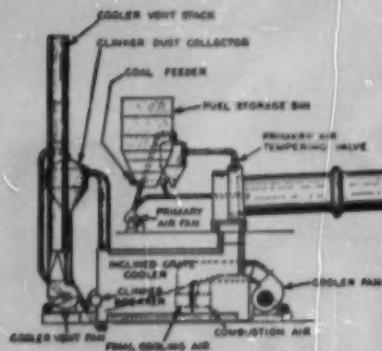
F. L. Smidth & Co. (Bombay) Ltd.  
42 Queen's Road  
Bombay, India

F. L. Smidth & Co. of Canada, Ltd.  
11 West 42nd Street  
New York 36, N.Y.



# Something new has been added...

**AGAIN, FULLER MAKES  
A CONTRIBUTION TO  
THE INDUSTRY . . .  
MORE EFFICIENT  
ROTARY-KILN OPERATION**



Complete kiln assembly including the Fuller Preheater, rotary kiln 7-ft. ID x 125-ft., and a Fuller Inclined-Grate Cooler, 6 x 125-ft. The by-pass is included for experimental purposes.

The latest and one of the most important contributions by Fuller Company to the cement industry since the introduction of the Fuller Inclined-Grate Cooler, is the Fuller Preheater. This equipment, developed and first used in Germany, using a multi-stage suspension process, preheats dry pulverized Portland cement raw materials in rotary kiln waste gases.

Effective use of rotary kiln waste gases to preheat raw materials in the Fuller Preheater has been successfully demonstrated by a full-scale operation in a cement plant in Eastern Pennsylvania. Up to date, orders have been received for three units, by as many different companies.

#### How it works

Pulverized materials are preheated in suspension in the gas stream in a multi-stage counterflow process, which draws the gases through a series of cyclone collectors. The material is fed counter to the gas flow, suspended in the gas stream, and collected in successive stages until

discharged through the kiln-feed pipe. Gas and material contact time is thus prolonged, providing a high degree of heat recuperation with a very low temperature differential between gas and material at the final stage.

#### What it does

Increases clinker production with relation to kiln volume, with reduction in exit-gas temperatures. Capacity in the first U. S. installation increased from 860 bbl. to 1500 bbl. per day, with a reduction in exit-gas temperatures to between 500°-600°F.

Lowers fuel consumption per barrel of clinker produced. U. S. installation reduced consumption from 1,100,000 Btu to between 650,000 and 700,000 Btu per barrel.

Extends the useful life of many existing short kilns.

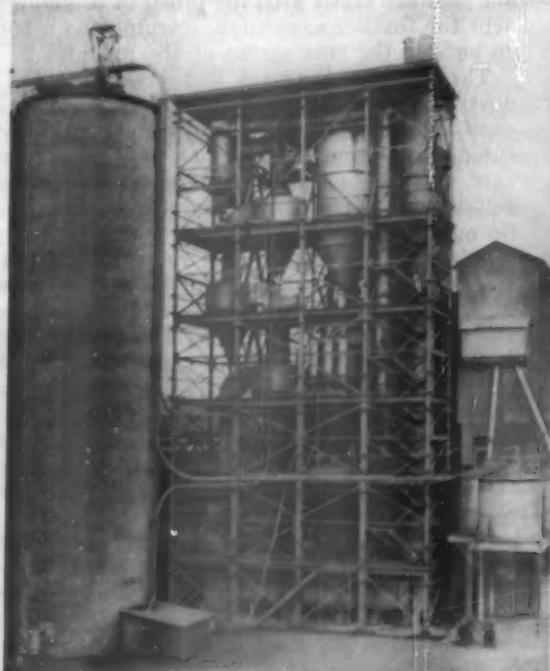
For existing dry-process kilns, the Fuller Preheater is designed so that the only capacity limitation is the practical fuel-burning capacity of the kiln.

FULLER-KINYON, AIRVEYOR, F-H AIRSLIDE, FULLER-FUXO CONVEYING SYSTEMS . . . FULLER INCLINED-GRATE COOLER . . . DRY PULVERIZED-MATERIAL COOLER . . . ROTARY COMPRESSORS AND VACUUM PUMPS . . . ROTARY FEEDERS . . . ROTARY GATE VALVES . . . MATERIAL-LEVEL INDICATORS . . . AERATION UNITS . . . SAMPLERS . . . MOTION SAFETY SWITCH

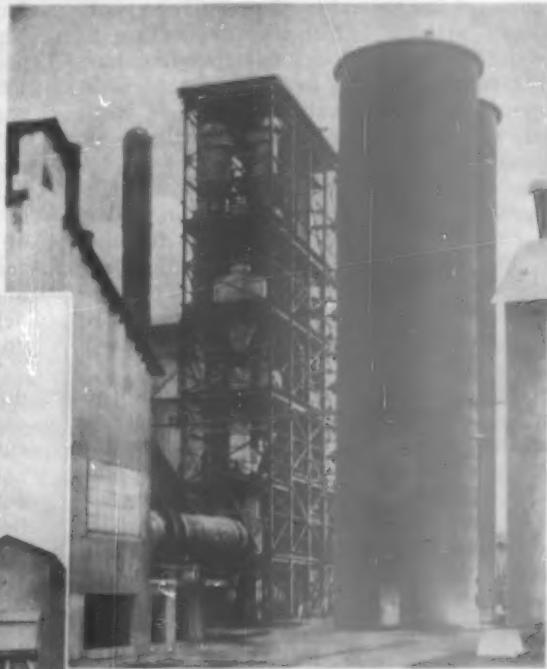
# Fuller Preheater

HUMBOLDT SUSPENSION TYPE

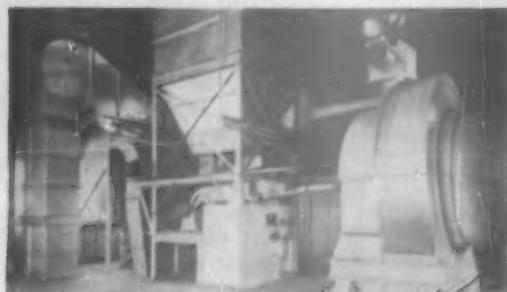
Installation views of first Fuller Preheater installed in the United States, with related equipment.



Arrangement of preheater and raw material supply systems.



Relation of preheater and supply systems to kiln.



Fuel supply system.

**FULLER COMPANY, Catawissa, Pa.**

GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY  
Chicago • San Francisco • Los Angeles • Seattle • Birmingham



PR-17



Fuller clinker cooler, showing branches of cooling air duct, which supply kiln combustion air and final cooling air.

# EDITOR'S PAGE

## Problems Facing the Industries as They Supply Enlarged Demands

IT IS SIGNIFICANT for industry that the nation has just completed the second most prosperous year in its history without fighting or supporting a war. The pinch of reduced defense spending has been successfully passed by and adjustment to a peace-economy has been realized. There is optimism everywhere that the new year will be at least as good a year for business as 1954.

Estimates that construction will increase again in 1955, probably to a thirty-nine billion dollar all-time record level, indicate prosperity for the rock products and concrete products industries. That prediction is supported by the views of producers as summarized in this issue of ROCK PRODUCTS. The majority anticipate increased volume of sales in 1955.

There will be expansion in all branches of the rock products and concrete products industries but larger emphasis will be on installations to upgrade quality and to reduce production costs. Competition for business has become much keener than a year ago.

Increased productive capacity throughout most branches of the rock products industries has caused prices to stabilize in the face of increased operating costs. There have been a few modest price increases, and there are price decreases which are cutting profits for a considerable number of producers. The need is for improved efficiency and stepped up rate of production to a high ratio of capacity in order to hold reasonable profit margins. Customer service, quality of product and, wherever possible, the development of new markets and new products are to be stressed, and given support by expanded sales effort.

The separate industries are faced with their special unique problems as they prepare for enlarged potential markets and seek to meet competition. In the portland cement industry, the challenge is one of financing plant expansion and rehabilitation to meet the demands.

Cement manufacturers have been criticized for cement shortages. The industry has increased its productive capacity to date by forty-six million barrels since World War II but that figure does not reveal the whole story on availability of cement. The industry had been operated at about fifty percent of the productive capacity existing up until World War II so there was substantial slack from which to draw.

Portland cement manufacturers have much heavier capital investment in plant and machinery per unit of labor and output than most industry. It costs ten dollars or more per barrel of annual capacity today for new facilities as compared to the two or three dollars invested in many older plants now in competition with the newer plants.

Rate of capital turnover, as a result, is probably four times as slow as it was with older plants, which is not favorable for outside financing. Depreciation allowances provided for since about 1940 were far short of needs for replacement and part of earnings has had to be retained to supplement depreciation allowances. Replacement money including earnings set aside for the purpose has had to be used for expansion which, in the case of the larger concerns, has been at the expense of other mills in need of replacement. Cement companies have largely used up their surpluses and now are faced with the prospect of going into debt for further expansion. Earnings as reported do not tell the true status of the industry.

The sand and gravel and crushed stone industries also have their special problems. Good sand and gravel deposits which are favorably located have been used up at an unprecedented rate, and the problem of reserves will grow in seriousness. Many is the producer today who will be out of material in ten to twenty years. His only recourse is to find new reserves and the result, if he is successful, will be at the expense of the customer who must stand delivery costs from more remote sources. Zoning and the continued tightening up of specifications for quality are aggravating the problem.

Both industries have that problem and they, along with the concrete industries, are faced with all manner of complaints stemming from residential encroachment in and around metropolitan areas. Good public relations and many concessions will be required in order to stay in business. Price competition has entered the picture on a substantial scale. Improvement in quality and better service will be stressed in order to meet the competition from lower quality, cheaper material.

The ready-mixed concrete industry continues to grow remarkably and many new plants may be anticipated this year.

This industry like the concrete masonry industry has rapidly expanded in numbers, and price competition in many areas is a threat to the stability and welfare of both industries. Better service, improved quality at lower cost and new products should be the practice rather than unjustified price concessions. Price cutting at the expense of reasonable profits is a step to failure and adds nothing to acceptance of products of the industries. It only leads to deterioration of quality and opens the door to outside competitive materials.

*Bear Nordberg*

Huron Portland Cement Co. is an  
**ALLIS-CHALMERS**  
Equipped Cement Plant



# With Modern Equipment, Huron Turns Out Record Cement Tonnage, Year After Year

HURON PORTLAND CEMENT COMPANY's huge plant at Alpena, Michigan, produces a record 10,000,000 bbls of cement annually, with synchronized, automatic operation in all phases of production.

In Huron's modern plant — largest cement plant in the world — Allis-Chalmers has supplied rotary kilns, crushers, dryers, grinding mills, power and electrical equipment. Like Huron, many other cement producers value A-C equipment highly. Performance records show that A-C equipment has helped reduce operating costs in cement plants.

Highly valued, too, is A-C engineering. When you call on A-C, skilled cement equipment specialists come into your

plant, work with your engineers or consultants, bring to your problems the rich background of Allis-Chalmers experience in engineering equipment for hundreds of cement plants in the U. S. and throughout the world.

If testing is needed, Allis-Chalmers offers unexcelled laboratory and pilot plant facilities. After your equipment is installed, A-C field men call back frequently, to see that everything is all right. Fast emergency parts service is another important phase of A-C service.

Your nearby Allis-Chalmers area representative can show you how A-C cement plant equipment — and engineering — can help you get low costs and efficient production.

A-4564

Boats deliver bulk cement  
Portland Cement Co.'s  
main points on the C

**ALLIS-CHALMERS**



# HOW ALLIS-CHALMERS FITS INTO CEMENT MAKING

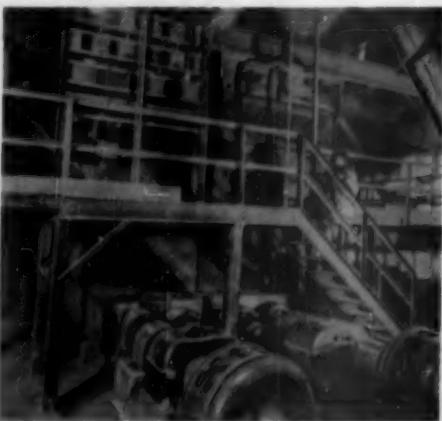
Here's another example of the broad range of Allis-Chalmers equipment for cement — installed in world's largest cement plant. A-C can design a complete cement plant — and furnish all equipment, too!



1 Huge quantities of limestone are required for Huron's annual 10,000,000 bbls of cement. Quarry-run limestone — 20 tons at a time — is dumped into 60 x 84-in. Fairmount crusher, one of two installed side by side in quarry near cement plant.



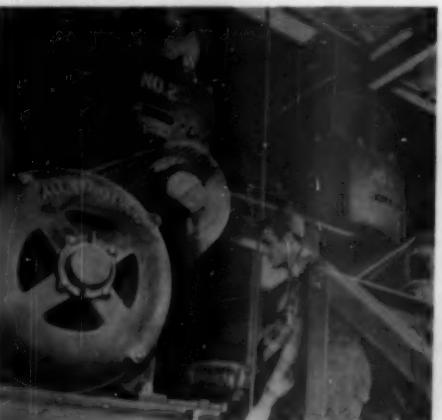
2 Each Fairmount crusher can munch up 20 tons of limestone in 32 seconds. Crushed product is hoisted to scalping screens. All minus 4-in. stone is conveyed to dryer building on conveyor.



3 So far, limestone and shale have been handled separately. They meet at proportioning scales, which weigh out one part shale to four parts limestone into a balanced "raw mix." Screw conveyors beneath scales are driven by Allis-Chalmers motors.



4 Nine raw grinding Compel mills, 7 x 26 ft, grind the stone and shale combination into suitable feed for rotary kilns. A division head separates these A-C mills into two compartments.



5 White hot cement clinker falls from kiln over Allis-Chalmers air-cooled kiln end (segmental alloy steel sections below refractory brick) which prevents kiln warpage and nose brick troubles.



6 Gypsum is dried in these A-C 5 x 50-ft rotary dryers, then crushed. About 30 lbs of gypsum are added to each 1000 lbs of clinker to keep cement from setting too rapidly.

# AT HURON PORTLAND CEMENT COMPANY



**3** Conveyor housing contains four endless belts 1200 ft long, driven by Allis-Chalmers motors. Shale, another major ingredient of portland cement, comes from another quarry in hopper cars.



**4** Shale drops from bottom of hopper cars to chain grizzly in dryer building. It is then fed to a 24 x 60-in. Allis-Chalmers single-roll crusher which reduces it to a minus 6-in. product before going to rotary dryers for moisture removal.



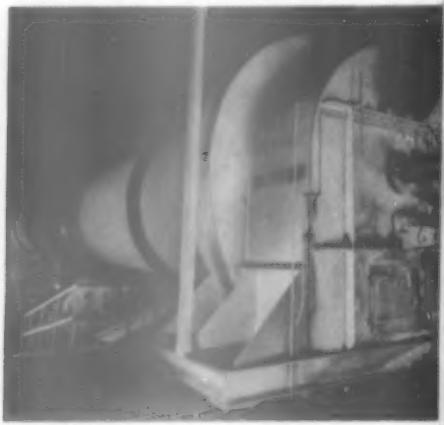
**5** One of four A-C rotary dryers in drying plant dries stone and shale by tumbling material through stream of hot gases. Four 7 x 100-ft dryers handle limestone. Two 8 x 100-ft units dry shale.



**9** Raw grinding mills are driven by Allis-Chalmers 500-hp synchronous motors. Smaller Allis-Chalmers motors drive screw conveyors for feeding raw mix to Compab mills.



**10** Raw mix goes to rotary kilns. Each of these 10 x 153½-ft Allis-Chalmers kilns produces 55 bbls of cement clinker per hour. Temperatures in kiln reach 2700 F in clinkering zone, 15 to 20 ft from discharge end. There are 18 kilns at Huron.



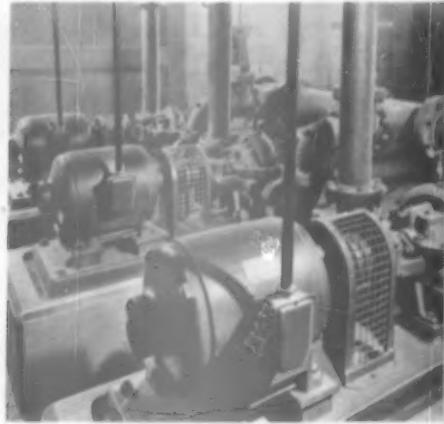
**11** Firing hood. Coal from overhead bin is pulverized in bowl mill, then blown into kiln. Auxiliary waste heat stack alongside firing hood conveys hot gases to dry coal before it enters kiln.



**15** Finish grinding. Twelve 7 x 24-ft two-compartment Compab mills grind clinker to a powder so fine it will pass through a sieve capable of holding water. Product is 1950 surface area.



**16** Two of six 190-gpm filter tanks are a part of a complete water conditioning system, built by Allis-Chalmers, which softens water for powerhouse boilers and steam turbines. This is a hot process water purification system.



**17** Three Allis-Chalmers single-stage pumps and 15-hp motors pass water from Zeolite tanks to filter tanks in water treatment system. Pumps are 600 gpm, 60-ft head, 1740 rpm.

# ALLIED EQUIPMENT.—POWER AND ELECTRICAL, PUMPS, ETC.

## "One Company" Responsibility is Big Advantage

**I**N PLANNING AHEAD for big volume production, Huron Portland Cement Co. considered it practical to specify Allis-Chalmers for a great number of their equipment needs.

Past experience had proved the value of Allis-Chalmers equipment in terms of performance . . . and in terms of durability that results in real savings in downtime and maintenance.

Allis-Chalmers equipment can be obtained complete with motors, drives, control, all built by one company, with mechanical and electrical factors matched for best working efficiency. And — A-C maintains a large staff of field engineers trained, not only in equipment engineering, but in prompt cooperation in seeing to it that equipment keeps operating at rated performance.



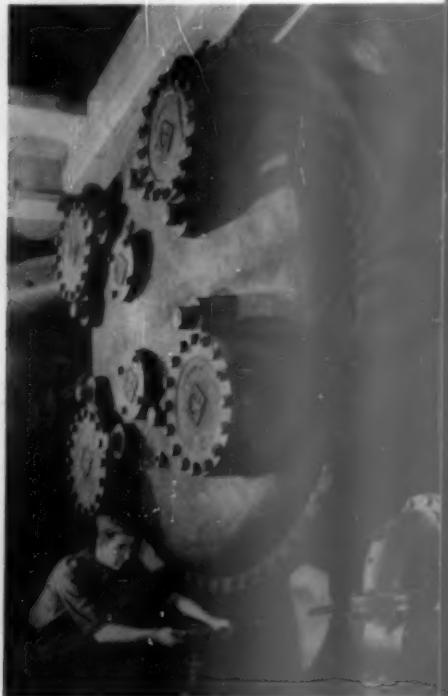
One of six Allis-Chalmers steam turbines in the power plant of Huron Portland Cement Co. This steam turbine generator unit is rated 12,500 kw and can generate 15,625 kw for cement plant and for auxiliary power for Alpena, Michigan. First Allis-Chalmers turbine was installed at Huron in 1915.



Battery of Allis-Chalmers distribution transformers, 1000 kva each, step down voltages from 4160 to 440 volts for plant use. 400,000 kw are handled daily.



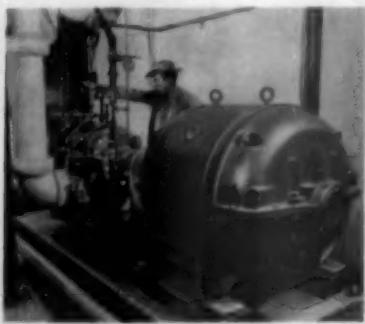
Allis-Chalmers motor control for rotary kiln provides electrical synchronization for kiln feed, cooler fan, feeder, bowl mill, dust screw, kiln tank feeder, etc.



Steam from turbine is condensed in this 96-in. two-pass Allis-Chalmers surface condenser. Condensate goes to water softening plant, then to waste heat boilers.



Large Type "S" pump, 20,000 gpm, 10-ft head, draws water from Lake Huron to a large turbine well, where it is drawn for plant use.



Allis-Chalmers 1200-gpm, 708-ft head boiler feed pump, driven by 300-hp motor, pumps water to boilers from storage tank in Huron power plant.



Rippl-Flo, Fairmount, Comp-o, and Hydrocone are Allis-Chalmers trademarks.

# ALLIS-CHALMERS

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Pioneers in Electrical Power Equipment—Biggest of all in Range of Industrial Products

# A Bright Future for Silica-Silicones

## ROCKY'S NOTES

NATHAN C. ROCKWOOD

SILICA (SAND) PRODUCERS are facing a diminishing market for foundry sands; and even the great glass sand market is being threatened by transparent plastics in many applications, as for example greenhouses and storm window sash. Hence, we are interested in any new markets that bid fair to grow, insignificant as they may be at the moment in tonnage consumed. Such a new market is for the manufacture of *silicones* — perhaps the most remarkable development in commercial chemistry in the last decade.

Practically every reader of any kind of a technical journal has some knowledge of silicones because scarcely a month goes by without a mention of a new product or a new use for a present one; and these uses cover nearly every branch of industry. It is quite possible that many of our readers are already using one or more silicone preparations under a trade name. To get a complete picture of what silicone development has been during the past very few years, we have before us a new book: "Silicones, and Their Uses,"<sup>\*</sup> by Rob Roy McGregor. We have made reference to it on another page of this issue, because of the light it throws on the chemistry of the element silicon, and cement chemists ought to know something of this, too.

Here, however we propose to review the text as a subject of much interest to silica sand producers, because while the present market may be rather insignificant, if all they say about silicones is true, there must certainly be eventually an almost unlimited field of usefulness, with a constant growing demand for that most essential raw material, which is silica. The steps by which silica sand is converted into silicon tetrachloride and hence into a variety of silicone products is sketched in the article elsewhere in this issue on "Prospective Chemistry of Cement and Aggregates." In the following few paragraphs we shall merely attempt to provide some insight for the uninitiated into the tremendous breadth of the field that already uses silicones in one form or another.

### Commercial Products

Commercially available silicones are obtainable as fluids, compounds, lubricants (grease and fluids), resins,

and rubbers. Fluids are made in many varieties and can be tailored to particular uses or demands. One of the commonest fluids is the dimethyl silicones made by the Dow Corning Corp. and the General Electric Co. They are described as having an oily or waxy feel, depending on the viscosity, which may be varied to fit the particular need.

As examples of some of the uses of dimethyl silicones, it is claimed that for a surface treatment of rubber, natural or synthetic, they increase surface resistivity, impart water repellency and reduce the adhesion of ice to rubber surfaces; they serve as lubricants for moving parts made of rubber. Also, it is said that these fluids incorporated in rubber stocks, particularly Neoprene and GRS, provide a beneficial effect on abrasion resistance, temperature stability and weather resistance. That seems to us to make their use for conveyor belt manufacture and maintenance desirable.

Water repellency of these silicones can be made use of in numerous other applications. They are insoluble in water. However, water vapor can pass through a thin coating of these silicones, which makes them ideal water repellents for surfacing masonry units, because it is always desirable to have these surfaces able to "breathe," so that moisture is not accumulated behind the surface film. Very likely a number of water repellent (or "water proofing") compounds now on the market are made of or with these silicones.

Probably one use for dimethyl silicones everyone is familiar with is in treated tissue paper, which comes in little booklets for wiping or cleaning spectacles or camera lenses. The impregnated tissue imparts an extremely thin film on the glass, removing dust and fog and making subsequent cleaning easier. In a very dilute alcohol solution the same kinds of silicones are used for cleaning and polishing glass tableware, as well as window glass. Similarly, a dimethyl silicone can be used for polishing car bodies, floors and furniture, either alone or combined with a wax.

When molding sticky materials like rubber or plastics, the dimethyl silicones are used as release or parting agents. Obviously casting concrete products that give trouble might be helped in this way and contamination

of molds and pallets prevented. Moreover, the surface of the product might be improved by the added water repellency of any of the silicone that adhered to it. They cost more than various other release agents, but are said to last much longer. Moreover, they can be diluted in various ways to meet the particular requirements.

### Additives to Other Materials

Dimethyl silicones added in even small amounts are claimed to provide unusual properties to other materials. For example, even in proportions as little as 1 to 50,000 parts per million (ppm) they are said to be useful as antifloating and antiflooding agents in paints. In shock absorbers silicone fluids are said to have special advantages, because they are not affected over a wide range of temperatures and have considerable compressibility. Of course, the most obvious use here is for shock absorbers in motor cars and trucks, but many vibrating screens in the rock products industries are equipped with shock absorbers, much to the advantage of maintaining the structures that house them.

Perhaps the largest field for methyl silicone compounds to date, and the one that has received the most publicity, is lubrication. Where there are the right combination of bearing metals and light to moderate loads, these silicone lubricants are said to have many advantages over petroleum products in their resistance to extremes of temperature (viscosity remains constant); they do not volatilize or oxidize, and have long life. It may be that there are applications in the rock products industries where the use of silicone lubricants would be economical, but we hear of them chiefly as lubricants for high-flying aircraft. They are said to be especially desirable for ball bearings.

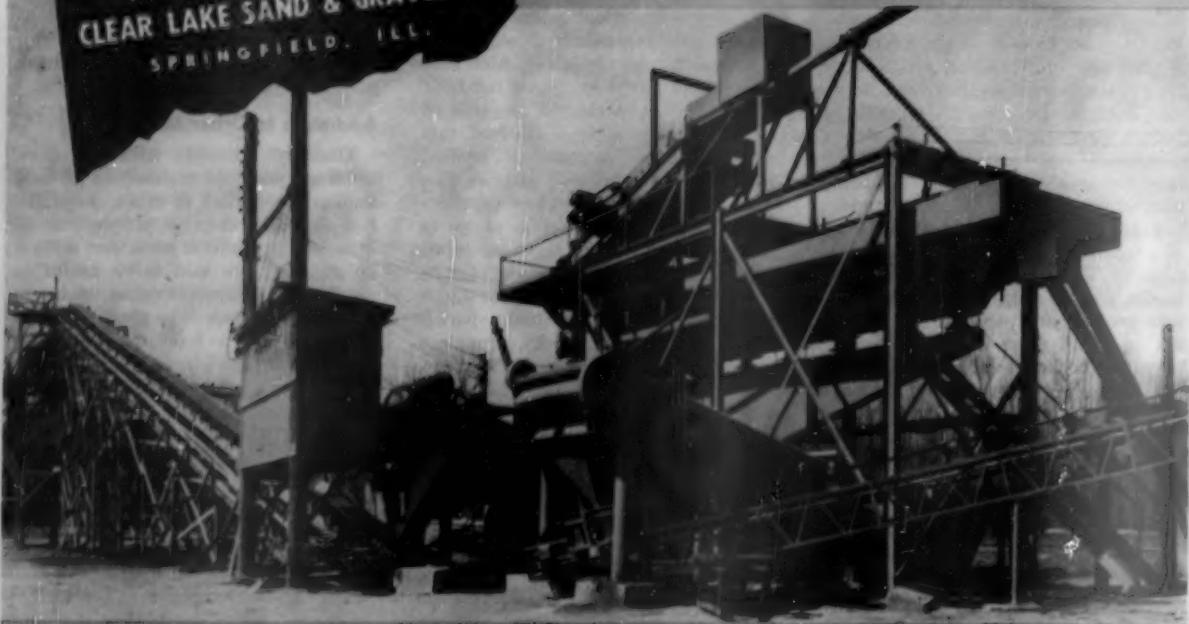
Greases are prepared from silicone fluids with fillers such as special soaps and carbon black. However, these greases are not used generally for continuously moving parts, but for plug and control valves, particularly in pipe lines for chemicals. They are best when lubricating rubber on rubber, or rubber on steel. We don't know whether valves on cement slurry lines give trouble or not, but there is an idea. The life of a silicone grease is

(Continued on page 126)

\*McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y., price \$6.00.

# "The fines we save are paying for our EAGLE Washing and Classifying Equipment."

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One double screw unit processes a coarse gradation of sand and the other processes a fine gradation, down to 200 mesh asphalt sand . . . 1200-tons plus per day. Materials that make the **BEST** kind of concrete and asphaltic road aggregates.

C. D. "Red" Casten, owner, reports that the fines they are saving has justified installation of the Eagle Washing and Classifying Equipment and is quickly amortizing the investment. Mr. Casten is shown in front of his neat, efficient plant.

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The logo for Eagle Iron Works, featuring the word "EAGLE" in large, bold, serif capital letters above the words "IRON WORKS" in a smaller, bold, sans-serif font.



# LABOR RELATIONS TRENDS

By NATHAN C. ROCKWOOD

## Refusal of Wage Increase Not a Refusal to Bargain

WITH THE CONSTANT INCREASES of wage rates at every contract renewal or reopening, the impression may have arisen in some quarters that a lone employer's refusal of an increase is *per se* a refusal to bargain, and hence a violation of the Taft-Hartley Act. This is not necessarily so, in the opinion of the U. S. Circuit Court of Appeals, 5th Circuit, New Orleans, La. The case involved a paper manufacturing company, but the same problem exists and the same principles apply in any kind of an industrial operation, and probably many of our readers are, or will be, faced with the same situation.

The case was that the National Labor Relations Board v. National Paper Co. The N.L.R.B. petitioned for enforcement of its order to the company under a charge that the company had refused to bargain with the union because it would not agree to an increase in wages, and because it hired a private detective agency to protect its interests against impending strike damage. The case dates back to February 24, 1953, and the Court decision is dated November 16, 1954.

The N.L.R.B. charges were that the company violated Section 8 (a) (1) of the Act by threatening its employees with discharge for union membership, promising them benefits if they renounced the union, and otherwise unlawfully interrogating them as to their union activities; that the respondent company had further violated Sections 8 (a) (3) and (1) of the Act by discharging an employee because she joined the union; and had refused to bargain with the union in good faith in violation of Section 8 (a) (5) and (1) of the Act.

The Board further found that respondent's company and the detective agency had jointly engaged in unlawful interference and restraint of employees, in violation of Section 8 (a) (1) of the Act, by subjecting them to coercive surveillance by armed guards during an impasse in bargaining negotiations culminating in a strike; and finally, that all three respondents were jointly responsible for certain threatening and insulting telephone calls found to have been made during the strike to an employee by one of the armed guards, the individual respondent, in further violation of Section 8 (a) (1) of the Act.

The basis for the N.L.R.B. charges

was as follows (in the language of the Court's decision): "Bargaining conferences were begun on May 14, and there is some testimony, credited by the Trial Examiner and the Board, that while negotiations were being held the company's superintendent told two employees that they 'would have already had a raise' but for the advent of the union in the plant, and that he would guarantee their jobs if they would withdraw from the union, but that if they ever 'walked out' they would not 'have a job back in the plant.' According to further testimony, another employee, whose authority to bind respondent is strongly disputed, told a then recently hired worker that it was 'a pretty good thing' he did not belong to the union, or he would not 'have a job any more.'

"The above recited testimony incorporates substantially all of the probative evidence upon which the Board's findings of interference and restraint may lawfully be based, though admittedly there is other credited testimony properly referable to the refusal to bargain charge which purports to quote remarks by the superintendent to three employees to the effect that the company's president would never sign a contract with the union. The president denied making these statements, and he further denied making any remarks concerning aversion to an agreement with the union, though this testimony was rejected by the Trial Examiner and Board. The superintendent testified affirmatively that, in order to dissipate a rumor circulated by the union in June, 1951, to the effect that the company would discharge any employee who withdrew from the union for prior activity in its behalf, he informed the employees that, whether they renounced the union or not, 'they wouldn't lose their job as long as anyone came there and did their work . . . that they could feel safe.' Credibility of the witness was primarily for the Trial Examiner's determination, and if we accord to his Intermediate Report and to the Board's findings based upon the usual presumption that the Examiner had the best opportunity to hear and observe the witnesses and to judge of their credibility, we would hold that the Board's findings of interference and restraint are supported by substantial evidence. For reasons hereafter to be stated, we cannot in this case accord to the Examiner's report

and the Board's findings based thereon the full measure of the usual presumption of correctness."

The Board's case on the discriminatory discharge of the employee did not hold water with the court because the superintendent claimed to have discharged her after a trial period of 14 days for inefficiency and inability to learn her job. He testified he did not know she was a union member until he saw her, after she was fired, on the picket line. To sustain its charge the Board accepted hearsay evidence.

Rejecting this charge, the Court said: "Testimony which requires the pyramiding of so many inferences in order to sustain a finding of a discriminatorily motivated discharge cannot legitimately substitute for that 'substantial evidence' essential to enforcement of a Board order. Accordingly the Board's findings and order as to the discriminatory discharge of this employee must be denied enforcement."

### Refusal to Bargain

The Court's decision on this issue reads in part: "Following the union's certification on March 27, 1951, only three bargaining conferences were held before the strike of August 16. The testimony is in conflict as to the progress made at these meetings, the Board contending it shows that the company made only minor and illusory concessions, and rendered the consummation of any agreement impossible through its adamant refusal to consider or grant any wage increase or fringe benefits, demanded by the union. The company, however, while conceding that it has consistently, though justifiably, refused to submit to the union's equally stubborn insistence upon a wage increase and other monetary demands, vigorously protests the validity of the Trial Examiner's conclusion that, by such good faith, as well as the Board's finding that it approached the conference table with a mind hermetically sealed against reaching agreement. It insists that the testimony as to its attitude throughout bargaining negotiations, viewed fairly and objectively, reveal that it complied with both the letter and spirit of Section 8 (a) (5) by making written proposals, counter-proposals, and numerous concessions to union demands, particularly as to seniority, grievance procedure,

(Continued on page 162)

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# PEOPLE IN THE NEWS

## Executive Vice-President

FRED A. MANSKE has been elected vice-president of the National Gypsum Co., Buffalo, N. Y., and will be in charge of production, operations



Fred A. Manske

and sales. Wells F. Anderson succeeds Mr. Manske as vice-president in charge of operations and manufacturing, and William M. North has been appointed vice-president to assist the chairman of the board. Clifford F. Favrot has been made a member of the board of directors.

Mr. Manske, who is also a director of the company, has been in the gyp-

sum industry since 1923. He joined the company in 1934, and has been successively assistant to the vice-president in charge of operations.

Mr. Anderson joined the company as production manager in 1951 and subsequently was appointed vice-president in charge of production.

Mr. North was a lawyer before joining the company in 1941. Before his present appointment he was assistant to the chairman, and prior to that was administrative assistant and assistant secretary, secretary, and general manager of the Kansas Ordnance Plant.

Mr. Favrot, president of Carondelet Realty Corp., New Orleans, La., was formerly president and principal owner of Asbestone Corp., which was merged with National Gypsum Co.



William M. North

two years ago. He succeeds William M. Currie, president of Currie Products, Ltd., Hamilton, Ontario, Canada, who has retired.

## Smithwick Heads N.C.M.A.

S. CARL SMITHWICK, president of Smithwick Concrete Products, Portland, Ore., has been elected president of the National Concrete Masonry Association, Chicago, Ill., the first time in 25 years that a representative from the Pacific Northwest has been elected president of N.C.M.A. Mr. Smithwick is well known in the industry, having served 14 years as district engineer in the Spokane, Wash., office of the Portland Cement Association prior to starting his concrete block operations



Wells F. Anderson

in Portland. He was also chairman of the aviation committee of the Spokane Chamber of Commerce for several years.

## On N.C.M.A. Staff

HENRY T. TOENNIES has been appointed assistant to R. E. Copeland, director of engineering of the National Concrete Masonry Association, Chicago, Ill., and William J. Allen has been named to assist W. P. Markert, director of promotion. Mr. Toennies, a native of Missouri and civil engineering graduate of Washington University, St. Louis, Mo., was formerly assistant laboratory chief for A. M. Kinney, Inc., consulting engineers, at the Atomic Energy Commission Project at Portsmouth, Ohio, where he supervised the testing of concrete and concrete masonry units. Mr. Allen is a native of Toledo, Ohio, and attended Toledo University. He was formerly assistant account executive and service manager with the advertising agency of Henri, Hurst & McDonald.

## Director of Research

FRANCIS A. MCADAM has been appointed director of research and development of the Huron Portland Cement Co., Detroit, Mich., according to an announcement by Paul H. Townsend, president. A graduate of Wentworth Institute, Boston, Mass., Mr. McAdam has been director of research, Southern States Portland Ce-



Francis A. McAdam

ment Co. and construction products manager of Dewey & Almy Chemical Co. During World War II, he served as head of the non-metallic section of the Building Materials Division of the War Production Board.

### Penn-Dixie Appointments

J. F. VOELKER has been appointed chemical engineer of Penn-Dixie Cement Corp., Nazareth, Penn., to succeed William P. Gano, who has retired after 51 years of service with Penn-Dixie and two of its predecessor companies — Dexter Cement Co. and Pennsylvania Cement Co. Mr. Voelker was formerly superintendent of Plant 4 and will be succeeded by John H. Jones. O. J. Giantz succeeds Mr. Jones as superintendent of Plant 2.

Mr. Voelker, who is a graduate chemical engineer of California Institute of Technology, Pasadena, Calif., joined Penn-Dixie in 1950. He has had wide experience in operations and chemical departments of the cement industry.

Mr. Jones, who graduated from Lehigh University, Bethlehem, Penn., as a mechanical engineer, joined Penn-Dixie as a student engineer in 1948, subsequently serving as engineer-draftsman and later as plant engineer at Plant 6. He was transferred to Plant 2 in 1951, and one year later became superintendent of the plant.

Mr. Giantz joined the Clinchfield plant in 1953 as plant engineer. A graduate in chemical engineering from the University of Denver, Mr. Giantz served for ten years as head of the cement unit of the U. S. Bureau of Reclamation prior to joining Penn-Dixie.

### P.C.A. Board Chairman

EMORY M. FORD, chairman of the Huron Portland Cement Co., Detroit, Mich., has been elected chairman of the board of directors of the Portland Cement Association, Chicago, Ill. He has been a member of the board of directors for the past 11 years and a member of the executive committee for the past year. He succeeds R. A. Hummel, chairman of the board of Lone Star Cement Corp., New York, N. Y., who has served as P.C.A. chairman for the past two years.

H. B. Robeson, president, Nazareth Cement Co., Nazareth, Penn., and James H. Ackerman, president, Dragon Cement Co., Inc., New York, N. Y., have been elected directors of the Association. They succeed M. E. Grunewald, president, Coplay Cement Manufacturing Co., Coplay, Penn., and D. A. Symmes, president, Glens Falls Portland Cement Co., Glens Falls, N. Y., who have retired as di-

rectors of the Association.

Mr. Ford was first elected a director of the P.C.A. in 1943, and has served continuously as a director to the present time. He also has served on the executive committee and as a member of several special committees. He was elected chairman of the Huron Portland Cement Co. in 1953, after serving more than 11 years as president. Mr. Ford is also chairman of the board of the Wyandotte Chemical Corp., and director of the Pittsburgh Consolidation Coal Corp., Cutler-Magner Corp., and Manufacturers National Bank, Detroit.

### U. S. Gypsum Manager

VIRGIL ESTES has been named Pacific manager of field quality for United States Gypsum Co., Chicago, Ill., in a recent reorganization announced by Floyd Thorman, manager of the quality section. Mr. Estes was formerly Los Angeles field manager of the quality section, and will continue to maintain his headquarters in Los Angeles. R. T. McClelland has been appointed assistant field manager — quality in the Central Pacific division, with headquarters in San Francisco, and R. L. Welty has been made field manager — quality in the North Pacific division, with headquarters in Portland, Ore.

### Mining Division Manager

FELIX J. LOSSON, JR., has been appointed manager of the mining division of Lakeland Engineering Associates, Lakeland, Fla., which has been organized to serve the engineering and technical needs of the mining and metallurgical industry in Florida and the Southeast, according to an announcement by Harry H. Edwards,

president of the firm. Mr. Losson was formerly chief engineer of the Florida phosphate division of the Davison Chemical Co. at Bartow, Fla. He received his B.S. and M.S. degree in metallurgical engineering at Purdue University, Lafayette, Ind. He is a member of the American Institute of Mining and Metallurgical Engineers.

### District Engineers

JAMES E. DUNN has been appointed district engineer in charge of the Orlando, Fla., office of the Portland Cement Association, Chicago, Ill. He was formerly manager of the Washington, D. C., office and will be succeeded by D. L. Chaney, who was regional structural engineer at Atlanta, Ga. Andrew J. Spradlin, formerly field engineer in southern Louisiana, has been named district engineer in charge of the New Orleans, La., office, which will serve cement users in the area formerly serviced by the Birmingham office.

### Sales Engineer

V. L. BARBOUR has been appointed senior sales engineer in the chemicals division of Kaiser Aluminum and Chemical Sales, Inc., Oakland, Calif. A graduate of Grove City College, Grove City, Penn., Mr. Barbour has had 15 years of engineering and sales experience in the Chicago, Philadelphia and West Coast areas. Previous to his appointment he was sales engineer in the northern part of the Central division of the chemicals division, with headquarters in Hammond, Ind.

### Named Superintendent

ROBERT K. MORRISON has been appointed by Sen. Bridges as superintendent of the federal mica depot at Franklin, N. H. He will have charge of promoting production of mica in the New England area and will also be in charge of mica purchasing. He was formerly assistant superintendent of Golding-Keene Co., Keene, N. H., in the mining and processing of feldspar and mica, and recently was sales engineer for Perkins, Bassett & Wright, Inc.

### Service Manager Retires

HARRY B. EMERSON has retired as Western service manager of Lehigh Portland Cement Co., Allentown, Penn., after 29 years of service. He will be succeeded by A. G. Watt as service manager of the combined Eastern and Western service departments, with headquarters in Allentown. A. G. Fallat has been appointed assistant



Felix J. Losson, Jr.

service manager of the company.

Mr. Emerson, who participated in the formation of the service department in the East, came to Chicago a few months after joining the company in 1925, and was placed in charge of the service department for the Western division, where he has remained ever since. His main activities were in the concrete products and ready-mixed concrete industries, and played an important part in their growth. Widely known throughout these industries, Mr. Emerson saw the concrete block business grow from small backyard plants to the very impressive manufacturing plants of today, and was identified with the ready-mixed concrete industry from its infancy to its present importance in the building industry.

#### District Manager

R. B. FISHER has been appointed Michigan district manager of the United States Gypsum Co., Chicago, Ill., with headquarters in Grand Rapids, Mich. He succeeds L. L. Smalt, who is on leave of absence. Mr. Fisher joined the Denver sales staff in 1947, and two years later was transferred to the Kansas City office. In 1953 he was appointed assistant sales manager of the plastering materials division, which position he held until his present appointment.

#### Operations Manager

KIRK HAZELTON has been appointed operations manager of the perlite division of the Great Lakes Carbon Corp., New York, N. Y. For the past seven years, Mr. Hazelton, who is well known in the building materials field, has been general manager of The Cleveland Gypsum Co., Cleveland, Ohio. Previously he had been engaged in sales, research, production and field service for United States Gypsum Co., National Gypsum Co., and Certain-teed Products Corp.

#### On T. M. A. Board

JOHN T. SHEA, president of Gulf Concrete Pipe Co., Houston, Texas, has been elected to the board of directors of the Texas Manufacturers Association. Mr. Shea, who served as director in 1945-1947 and as regional vice-president in 1947, was elected to fill the unexpired term of Wallace Armstrong.

#### Named Superintendent

GEORGE WOOD has been appointed superintendent of the Rapid City, S. D., plant of L. G. Everist, Inc., Sioux Falls, S. D. He was formerly superintendent of the Hawarden, Iowa,

plant and will be succeeded by George Shannon. Walt Hampson becomes superintendent of the Dell Rapids, S. D., plant.

#### On C. of C. Committee

J. S. ST. JOHN, vice-president and general manager of the Erie Sand and Gravel Co., Erie, Penn., has been appointed to a committee of the Greater Erie Chamber of Commerce, which is studying creation of a Port Authority for the city.

#### Loses Re-election

S. WALTER STAUFFER, former president and general manager of the National Lime Association, was defeated by his Democratic opponent for re-election as Congressman from his home district of York, Penn., we regret to announce.

#### OBITUARIES

M. W. LOVING, consulting engineer and a contributing editor to ROCK PRODUCTS since 1945, died December 3 at his home in Glenview, Ill. He was 63 years of age. Mike, as he was known to all of his friends, was a well known authority on concrete pipe and was actively engaged in consulting engineering at the time of his death. A native of Texas, he was a graduate in civil engineering from Virginia Polytechnic Institute, Blacksburg, Va., and his first job was as a draftsman for the Baltimore Sewerage Commission. He was later employed by the Universal Cement Co. before enlisting in World War I, where he served overseas as a captain in the Corps of Engineers.

Mike joined the Portland Cement Association in 1919, serving for many

years as hydraulic engineer. He also was secretary of the American Concrete Pipe Association for many years, resigning in 1945 to enter private consulting work, maintaining an office in his home at Glenview. He was active for many years on committees of the American Water Association and the American Society for Testing Materials. His committee work had to do with specifications for concrete pipe, and he was very active in the promulgation of concrete specifications, principally reinforced concrete culvert pipe for A.S.T.M., and pressure pipe for the American Water Works Association. He was author of numerous articles on the manufacture of concrete pipe in ROCK PRODUCTS and in other publications. He also authored many publications of the American Concrete Pipe Association and numerous of his own publications in recent years.

Mike served as consulting engineer for many leading concrete pipe companies throughout the United States. He also was frequently called upon as an expert witness on litigation concerning the quality, construction procedures and placing of concrete pipe. He was truly a rugged individualist and had a reputation for always fighting for what he thought was right. His main interests, outside of his family, were big game hunting and the subject of concrete pipe and concrete generally.

WALTER ERNEST ANDERSON, founder of the W. E. Anderson Sons Co., Columbus, Ohio, passed away November 28 at his home in Lake Wales, Fla., following a three-weeks illness. He was 83 years of age. Born in Chattanooga, Tenn., Mr. Anderson was a pioneer in the ready-mixed concrete industry and was active in the management of W. E. Anderson Sons Co. for many years. The firm is now known as the Anderson Concrete Corp. and is operated by his son, Ralph.

JOSEPH LUKCSO, chairman of the board of the Lukcs Sand and Gravel Co., Cleveland, Ohio, died November 19. He was 80 years old. Born in Austria-Hungary, Mr. Lukcs came to the United States at an early age. In 1920 he founded a hauling business and in 1946 he and members of his family organized the Lukcs Sand and Gravel Co. Mr. Lukcs was also chairman of the board of the Schaaf Road Coal & Supply Co., and president of Joe Lukcs, Inc., dealer in building materials.

WALTER E. CORBETT, president and treasurer of the Corbett Concrete Pipe Co., Inc., Milford, Mass., and a former president of the American Concrete Pipe Association, died November 5 at the age of 66.



M. W. Loving

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# INDUSTRY

## NEWS

### Cover Picture

ON THIS MONTH'S COVER is an illustration of the Bausman plant of Pennsylvania Glass Sand Corporation near Newport, N. Y.



At this plant fine silica is removed from waste water by a battery of six 6-in. rubber-lined Dorr-Clone classifiers. The operating pressure of 10 to 11 p.s.i. is supplied by hydrostatic head. This

pressure differential is the result of the installation of the cyclones at ground level, about 30 ft. below a de-watering Dorr classifier. Overflow from this classifier discharges directly to the DorrClone units through an 8-in. header. Recovery of 99.7 percent of the silica, discarded with plant tailings, prevents accumulation of solids in a water supply pond.

### Opens Asbestos Plant

JOHNS - MANVILLE CORP. recently opened the first section of its new asbestos plant, located at the company's Jeffrey mine at Asbestos, Que. Half of the 14-story, \$20,000,000 plant is now completed, with 25 percent of the machinery in operation. When completed the plant will have a yearly production capacity of 625,000 tons of high quality fiber. The plant is scheduled for completion in early 1956.

Canadian Johns-Manville reportedly mines more than one-third of the world's supply of asbestos fiber. The Jeffrey mine is said to be the largest known asbestos ore deposit in the world.

The total asbestos production in Canada in 1953 amounted to 911,713 tons, valued at \$87,633,124, with 97 percent of the production being exported, mostly to the United States.

### New Cement Plant

UNIVERSAL ATLAS CEMENT CO., New York, N. Y., has announced plans for a new cement plant, with an annual capacity of more than 3,000,000 bbl. of cement, to be built adjacent to its Buffington plant at Gary, Ind. The combined facilities are expected to provide a total capacity of

more than 10,000,000 bbl. of cement per year for the Buffington operation.

In addition, plans have been made for an associated project consisting of a clinker grinding plant and related facilities at Milwaukee, Wis. Cement clinker will be shipped by boat to Milwaukee, where it will be ground to finished cement. Completion of the Milwaukee plant will provide the first cement-producing plant at that location, and will more than double the cement presently available through the company's bulk and package plant there. Construction of the new facilities is expected to be completed and production begun in 1956.

### Perlite Franchisees

GREAT LAKES CARBON CORP.'s Perlite Division recently announced that new franchise agreements to produce expanded perlite under the "Permalite" trade-name have been completed with four more processors, bringing to 23 the number of exclusive franchisees in the Permalite group. The four new members are: Gregg Products Co., Grand Rapids, Mich., headed by Oliver N. Gregg; Buffalo Perlite Corp., Buffalo, N. Y., of which Howard W. Mason is general manager; Perlite Industries, Reg'd., Pierre, Que., under the management of Guy Germain; and Perlite Products, Ltd., Winnipeg, Man., with George C. Davis as general manager.

Announcement was also made that two other companies operating under the Permalite franchise plan have changed their firm names. Certified Industrial Products, Inc., is the new name of the New Jersey Perlite Corp., Hillside, N. J., and Precast Slab and Tile Co., Inc., St. Louis, Mo., is now known as the Federal Cement Tile Co., St. Louis, Div.

### Makes "Silica Soot"

DOW CORNING CORP., Midland, Mich., has started production of "silica soot," a new silica product said to be an almost chemically-pure silicon dioxide. It is claimed that the silica has a 99 percent degree of purity and that its particles are hundreds of times smaller than silicas formed by conventional processes. Among the potential uses of the product are its use as: A reinforcing filler for synthetic rubbers and plastics; and extender for protective coatings; a thickener for lubri-

cating grease; and as an additive in textile finishing.

### To Install Longest Conveyor

POTASH CO. OF AMERICA is installing at its potash mine in Carlsbad, N. M., what is claimed to be the longest conveyor system in the United States. The present conveyor system at the Carlsbad mine is 5800 ft. long. The expansion program calls for units totaling 32,320 ft., which will increase the combined length to 38,120 ft., or approximately 7½ miles.

The record-length "rubber railroad" will operate 100 ft. underground in a potash ore seam about 4 ft. thick. Continuous mining machines will extract the ore from the working face of the mine and deposit it on shuttle type conveyors known as Mine-veyors, which automatically transfer it by intermediate belts to the main belt. From there the potash will be carried more than 5 miles to a 3000-ton underground storage pocket from which it will be withdrawn as needed by a special rotary plow feeder. It is then delivered to a vertical skip hoist by additional belt conveyors.

The conveyor system, when completed late in 1955, will consist of 45 units linked together to carry the material in a continuous flow from the mining area to the plant. The system is being designed and built by Hewitt-Robins, Inc.

### Powdered Granite as Fertilizer

GROUND GRANITE, can be utilized as a fertilizer, according to the results of a research program announced by Prof. Charles J. Lyon of the botany department of Dartmouth College. In a report to the New Hampshire State Planning and Development Commission, Prof. Lyon stated that two minerals, feldspar and mica, both common ingredients of granite, may be useful as potassium fertilizers for a variety of plants. He stated that from his initial work with perthite, a variety of feldspar, he has found that alfalfa and alsike, white and ladino clover "benefit greatly from applications of two tons of perthite per acre, or four tons of high-potash 'ground feldspar' per acre." The mineral must be ground fine enough to pass a 120-mesh screen. Even better results are said to be obtained when ground fine enough to pass 200-mesh screen.

## Portland Cement Production

THE PORTLAND CEMENT INDUSTRY produced 25,549,000 bbl. of finished cement in September, 1954, as reported by the Bureau of Mines. This was a 7 percent increase over the September, 1953, figure. Mill shipments totaled 29,058,000 bbl., 6 percent above the shipments in September of the previous year, while stocks were 15 percent less than those on hand on the same date a year ago. Clinker production during September, 1954, totaled 24,166,000 bbl., an increase of 9 percent above the September, 1953, total. The output of finished cement during September, 1954, came from 157 plants located in 37 states and Puerto Rico. During the same period of 1953, 23,795,000 bbl. were produced in 157 plants.

## German Cement Exports Dip

GERMAN CEMENT EXPORTS dropped sharply during the first half of 1954, according to a recent report in the *New York Journal of Commerce*. During the first six months of 1954, the German cement industry reportedly shipped only DM 34.7 million (\$8.3 million) worth of cement abroad, compared with DM 60.9 million and DM 71.6 million in the first six months of 1953 and 1952, respectively.

## To Build Cement Plant in B. C.

INTERNATIONAL CEMENT CORP., subsidiary of C. F. McDougall Associates, Dallas, Texas, has started construction of a new cement plant near Chilliwack, B. C. The plant, which will cost an estimated \$5,000,000, will be British Columbia's second cement plant. British Columbia Cement Co. operates the only cement plant in the province at present, at Bamberton on Vancouver Island. The new plant will employ between 60 and 100 men. Production is scheduled to begin in May, 1955.

## Acquires Shale Property

NORTH AMERICAN CEMENT CORP., New York, N. Y., recently acquired three tracts of land containing shale deposits which will be quarried for use in cement production at the company's Howes Cave, N. Y., plant. Clay deposits in the vicinity of Howes Cave, used for many years by the company, reportedly have been exhausted. The newly acquired property is about eight miles from the cement plant. A railroad siding has been constructed along the mountain for hauling the shale and rock to the plant site.

## Gravel Permit

A. E. FOWLER AND SONS has been granted a permit for operation of a sand and gravel plant at Orange, Calif.

Permit requirements included limitation of excavating operations to 12 daylight hours per week day; posting of a \$5000 bond to insure provision of adequate dust control; and compliance with flood control district regulations regarding excavating operations.

## Liming for Lakes

MICHIGAN STATE COLLEGE is conducting extensive research to determine the effect of hydrated lime applications to calcium-deficient lakes, and its effect on marine life. Studies have already been made at Wisconsin and at Rutgers University. The federal government and several private organizations are also said to be interested in the liming of lakes. Plans are being made to reclaim a 25-acre lake at Elgin Air Force Base, Fla., with hydrated lime, as reported by the U. S. Fish and Wildlife Service. Other experiments in the same area have been reported to neutralize acid waters with 110 percent increases in fish life. In Iowa, a private fish grower is using about 2000 lb. of quicklime per year for pond treatment, and in Texas, a church organization is considering the addition of lime to a lake in order to clarify the dark mineral colored waters for swimming and other recreational purposes. The growing interest in hydrated lime for such purposes may indicate the beginning of a commercially significant lime market.

## Cement Freight Rate Cut

THE FLORIDA STATE RAILROAD Commission recently approved what it estimated would be a 40 to 50 percent reduction in rail freight rates for transportation of cement. The commission also increased the minimum carload from 80,000 lb. to 110,000 lb.



Shown above is a Bucyrus-Erie 1250-B walking dragline, nicknamed the "Super Scooper," in operation at International Minerals and Chemicals Co.'s phosphate field near Bartow, Fla. The dragline has a 235-ft. boom which swings a 26-cu. yd. bucket.

According to the commission, "The proposed rates constitute a considerable reduction over the present rates and eliminate the so-called Florida arbitraries which have served to increase the rates on cement traffic to destinations in peninsular Florida."

The same rates are applicable to interstate shipments of cement in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and the part of Louisiana east of the Mississippi River.

## Adds Two Barges to Fleet

NEW YORK TRAP ROCK CORP., New York, N. Y., has announced the addition of two steel barges to its fleet, helping to bring to a close the company's \$1,500,000 barge-building program undertaken this past year. These are the first steel barges to be purchased by Trap Rock which operates a fleet of 180-odd wooden barges. The new steel barges, which measure 120 ft. long and 36 ft. wide, can carry 1000 cu. yd. of stone, compared to 800 cu. yd. of material carried by the wooden barges.

The two new barges were named after two 40-year employees: P. J. Merritt, shovel runner at the Clinton Point plant (Poughkeepsie); and Benjamin Peterson, shovel runner at the Haverstraw plant. Officiating at the launching ceremonies were: Wilson P. Foss III, president of New York Trap Rock Corp.; and Arthur Hiltibrant, general manager of Bethlehem Steel Co.'s Shipbuilding Div.

## Buys Government Alumina Plant

IDEAL CEMENT CO., Denver, Colo., has purchased the federal government's experimental alumina plant at Laramie, Wyo., at a reported cost of \$1,200,000. Chris Dobbins, president, stated that the plant will be converted for lightweight aggregate production. The aggregate, which will be made from clay obtained from quarries within five to seven miles of Laramie, will be marketed in Utah, Wyoming, Colorado, Nebraska and, possibly, Minneapolis and St. Paul, Minn., according to Mr. Dobbins.

## Proposed Merger

CONSUMERS CO. stockholders have approved a proposed merger of the company with Frontier Chemical Co. and Follansbee Steel Corp. Frontier, with plants at Wichita, Kans., and Denver City, Texas, is a producer of basic chemicals. Consumers Co. produces crushed stone, gravel, ready-mixed concrete and coal. Operation and management of Consumers will not be affected by the merger.

## Acquires Standard Lime

AMERICAN-MARIETTA CO., Chicago, Ill., has announced the acquisition of Standard Lime and Stone Co., Baltimore, Md., which has assets of more than \$18,000,000. The newly acquired firm operates nine plants in seven states, producing portland cement, crushed limestone and sintered dolomite for the steel industry, and chemical lime for the chemical and paper industries. The company also has limestone deposits in Maryland, Virginia, West Virginia, Pennsylvania, Ohio, Indiana and Illinois. An expansion program is underway, which will increase Standard's cement capacity by about 750,000 bbl. annually.

## Cement Plant Expansion

BESSEMER LIMESTONE & CEMENT CO., Youngstown, Ohio, recently announced plans for expanding its cement plant operations at Bessemer, Penn. The expansion will include installation of a new kiln and additional grinding facilities. Frank B. Warren, president, in making the announcement, stated that demand for cement is continuing strong and supplies are tight, reflecting the large construction programs underway throughout the country. The Ohio Turnpike construction alone reportedly is taking 7 to 8 percent of the cement supply.

## Buys Petoskey Cement Firm

PENN - DIXIE CEMENT CORP. has purchased Petoskey Portland Cement Co. and Petoskey Transportation Co. of Petoskey, Mich., as announced by B. W. Druckenmiller. The acquisition is expected to increase the corporation's annual cement production by about 1,600,000 bbl. Plans are being made for expansion and modernization of the plants, estimated at \$1,000,000, including the addition of new crushing equipment, coolers and trucks. Both companies are operating under the Penn-Dixie name.

## Pavement Yardage

AWARDS OF CONCRETE PAVEMENT for the month of November were listed by the Portland Cement Association as follows:

	Sq. yd. awarded during November, 1954
Roads	1,919,406
Streets & Alleys	1,656,518
Airports	1,500,218
Total	5,076,141

## Plant Maintenance Show

THE SIXTH PLANT MAINTENANCE & ENGINEERING SHOW will be held at the International Amphitheatre, Chicago, Ill., January 24-27, 1955, as announced by Clapp & Poliak, Inc., New York, N. Y., founders and producers of the show. The show reportedly will

be the largest in its history and will be the first industrial exposition to occupy the large new \$2,000,000 hall which has been built as an addition to the International Amphitheatre. Use of the new hall will permit all general sessions of the Plant Maintenance & Engineering Conference to be held in the arena, adjoining the exhibits.

## Buys Crushed Stone Plant

J. E. BAKER CO., York, Penn., has acquired the Verdon Stone Corp.'s crushed stone plant at Verdon, Va. The company has announced modernization plans amounting to over \$200,000 for the newly acquired plant, which will have a capacity of approxi-

mately 800 tons of crushed stone daily. In addition to purchasing the Verdon plant, the firm recently bought a 470 acre quarry site in Hanover County, Va., at a cost of more than \$50,000. It also operates plants in Pennsylvania, Maryland, Ohio and West Virginia.

## Votes Stock Split

STOCKHOLDERS of Permanente Cement Co., Oakland, Calif., recently approved an increase in the number of authorized shares from 2,000,000 to 4,000,000 shares. This effects a two-for-one split of the stock. The dividend rate on the split stock is \$0.20 per share.

## Coming Conventions

**January 9-13, 1955—**

National Ready Mixed Concrete Association, Silver Anniversary Convention, Miami, Fla.

**January 9-13, 1955—**

National Sand & Gravel Association, 39th Annual Convention, Miami, Fla.

**January 10-13, 1955—**

American Road Builders' Association, Annual Convention and Highway Materials and Supplies Exhibit, Roosevelt Hotel, New Orleans, La.

**January 12-13, 1955—**

Wisconsin Concrete Products Association, 35th Annual Convention, Plankinton Hotel, Milwaukee, Wis.

**January 17-18, 1955—**

National Agricultural Limestone Institute Inc., 10th Annual Convention, Hotel Statler, Washington, D. C. Executive Committee, January 15, Board Meeting, January 16.

**January 24-27, 1955—**

National Concrete Ma-

sonry Association, Convention and Exposition, Cleveland, Auditorium, Cleveland, Ohio.

**February 7-9, 1955—**

National Crushed Stone Association, 38th Annual Convention, Netherland Plaza Hotel, Cincinnati, Ohio.

**February 14-16, 1955—**

Fourth Annual Quality Concrete School, Georgia Institute of Technology, Atlanta, Ga.

**February 21-24, 1955—**

American Concrete Institute, 51st Annual Convention, Hotel Schroeder, Milwaukee, Wis.

**February 23-24, 1955—**

Iowa Agricultural Limestone Association, Inc., Tenth Annual Convention, Savery Hotel, Des Moines, Iowa

**March 9-12, 1955—**

American Concrete Pipe Association, 47th Annual Convention and Meeting, Sheraton-Plaza Hotel, Boston, Mass.

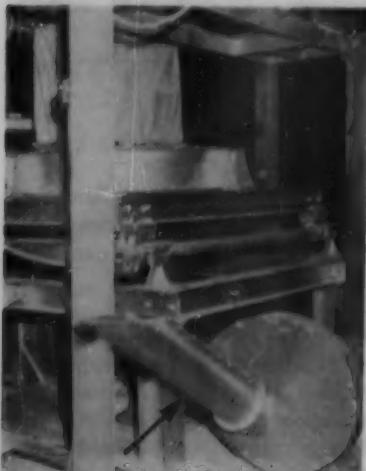
# HINTS

## AND HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

### Safe Fiber Picker

FIBERED HARDWALL PLASTER represents a very substantial percentage of the material that is shipped from a gypsum calcining plant. This is the base coat for practically all interior plasters. At the point of use, it is mixed with masons sand or perlite and ap-



Long feeding chute to fiber shredder prevents workmen from getting hands into machine

plied to the lath or as additional coats over the "scratch" coat, as the first application is often called.

The amount of fiber used is generally in the 8 to 18-lb. per ton range, and it arrives at the calcining plant in tight bales. Before it can be adequately mixed with the finely ground calcined gypsum, it has to go through a

shredder. This is a high speed, vertical revolving disc with sharp projections (at right angles to the disc) over the face of the disc. Opposing this disc is a stationary section also with sharp, nail-like projections.

The older types of shredder had a chute about 8-in. long, and for each ton of hardwall plaster, the mixer operator had to weigh up and feed to the shredder the required amount of fiber. With this short chute, the nail-like projections on the revolving disc would always be seen and presented a hazard to the operator for if he ever got his hand into the shredding area, a serious accident resulted.

It was learned that the revolving disc set up a considerable amount of suction which permitted a far safer machine to be provided. The illustration shows the long feed chute to the Ehrsam shredder; a chute long enough so that it would be practically impossible for the operator to get his hand in the works. The shredder discharges direct to a paddle-type (two horizontal shafts) mixer that is under the one-ton weighing hopper.

### Spotting Freight Cars

THE ACCOMPANYING ILLUSTRATION shows an interesting application of a 4-wheel-drive Model TM Hough tractor in use at the L. G. Everist Co. plant at Yankton, S. D. The tractor is used to spot carloads of sand and crushed stone over the conveyor pit. It also moves loaded and empty cars into and out of the yard. Approximately 30 cars per day are handled. The tractor, which has four speeds in each



Four-wheel drive tractor spots cars of sand and crushed stone over conveyor pit; also moves loaded and empty cars into and out of yard

direction and torque converter drive, has the advantage of moving quickly across yards and tracks instead of following rails. It reportedly has a drawbar pull of approximately 16,000 lb. and is available with gas or diesel engine, and can be equipped with switchman's platforms, catwalks, standard railroad couplers, and air brake equipment to control the cars handled.

### Portable Field Hopper

A LARGE PORTABLE FIELD HOPPER is used by a sand and gravel operator in the Northwest. It is perhaps one of



Portable field hopper rides on large diameter rollers that may be moved over timber track

the largest and heaviest in the industry. The field hopper also includes a belt conveyor feeder, below, that delivers material to the field belt conveyor serving the plant. The portable hopper operates over ground which has been leveled almost flat by a 12-cu. yd. Sauerman crescent drag scraper excavator.

As shown in the illustration, the field hopper is carried on four heavy rollers. They are about 20 in. wide and probably more than 40 in. in diameter. The rollers ride on wood "mud" boards that resemble a heavy and strongly built sidewalk.

### Truck Traffic Control

AT A LARGE CONSTRUCTION JOB in the West, sand and gravel is being processed at the site. Trucks haul the material over a private road that

crosses a relatively important state highway at right angles which makes necessary a system of traffic control to promote safety and speed up traffic on both roads. A "Stop and Go" traffic signal with conventional red and green signal lights has been installed on the state highway. As a loaded truck speeds toward the crossing, it intercepts the beam from an electric eye that causes the light to turn red. After crossing the state highway, the light turns green. No electric eye is used in the second case or green light; only a time factor sufficiently



**Signal actuated by electric eye, above, warns automobiles of approaching truck hauling sand and gravel. Below may be seen truck intercepting electric eye**

long to insure that the truck is well across the highway.

On the return trip, the empty truck actuates an electric eye that sets the red signal on the state highway, and again a time factor permits the empty truck to be well past the intersection when the traffic light turns to green.

The road over which aggregate is hauled is not paved, but dust is kept at a minimum by adequate truck sprinklers. However, a small cloud of dust which does arise is a fairly good advance warning for the average automobile driver using the heavily traveled state road.

### Grizzly Rejects Boulders

AT THE UNION SAND & GRAVEL COMPANY'S Yardly plant, near Spokane, Wash., a 5-cu. yd. Sauerman crescent drag scraper does the primary excavation 30 ft. below water.



**Grizzly which prevents boulders over 12 in. diameter from being sent on to the plant. Arrow points to 2-cu. yd. scraper bucket which is used to remove hard pan**

The total face is about 70 ft. The deposit has variable amounts of large boulders in the 3-ft. diameter and larger range. In addition there is a thin layer of hard pan that complicates excavation.

However, a system has been worked out to meet the problem, involving the use of a 2-cu. yd. crescent bucket on the pull-line when it is desired to penetrate the hardpan. To dispose of the large boulders, a sloping steel grizzly has been provided that rests at right angles to the pull line. Gravel is pulled up a ramp (of gravel) that is about 4 ft. higher than the high end of the grizzly. Either the 2-cu. yd. or the 5-cu. yd. power scraper pull material up to a point alongside the high end of the grizzly where the material spills sidewise to the grizzly. The finer material (minus 12-in.) goes through for additional processing, and the very large boulders slide off the end of the grizzly where a second but smaller drag scraper hauls them back towards the pit. The grizzly was designed so

that it could be tipped for unloading, but this was found unnecessary. The 5-cu. yd. crescent bucket excavates about 250 t.p.h., and the 2-cu. yd. scraper at the rate of 100 t.p.h. The drag scraper is driven by a 350 hp. motor.

### Special Screen Set-up to Reduce Segregation

IT IS OFTEN NECESSARY to make a split of the minus 1½-in. gravel, dividing it into a 1½ in. to ¾-in.; and a ¾ in. to plus 4 mesh. In this case, the purpose of the split was to reduce segregation. To accomplish this, the operator of this western plant installed a 3- x 8-ft. Cedarapids screen over the Butler bins. The inclining belt conveyor shown in the illustration, is normally serving a storage pile of minus 1½-in. gravel. The flop-gate can be lowered into position so as to pick up the minus 1½-in. and send it to the rescreening section as indicated by the arrow in the illustration below.



**Screen over bin, to the right, helps to prevent segregation. Arrow points to flop gate over inclined belt conveyor**

# NEW MACHINERY



### Integral Motor

LOUIS ALLIS CO., Milwaukee 7, Wis., has announced the integral Brakemotor featuring a short overall length, made possible by utilizing the motor and bracket as an integral part of the brake. The brakes are designed to furnish a maximum continuous duty torque from 3 ft./lb. in the smaller sizes to 50 ft./lb. in the larger sizes. An external wear indicator shows whether the brake is operating properly at each engagement. A torque-adjusting nut sets the brake adjustment for any rating to maximum. The motor which utilizes disc brakes, is available in N.E.M.A. frame sizes from 203 to 326.



### Grouser Track Shoes

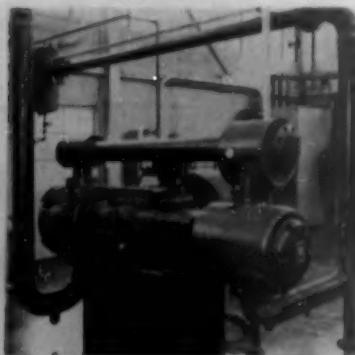
CATERPILLAR TRACTOR CO., Peoria, Ill., has brought out double grouser track shoes for D8 tractors designed to eliminate track slippage and bending under severe operating conditions when working in blasted rock. The shoes consist of two parallel grousers, lower in height and wider than the single grouser shoe, with added metal at the edge of the shoe covering the hinge joint. The second grouser at the mid-section of the shoe protects the track shoe bolt heads. The double grouser shoe is designed solely for service where the footing creates severe bending stresses and where the

rate of wear is extremely high due to track slippage and tearing away of metal from the shoe in extremely rocky footing. It is not recommended for steep side hill work or on frozen ground as it presents a wide area with low penetration and side slip.



### Rear-Dump Trailer

C & D MANUFACTURING CO., Perkins, Calif., has introduced the Sierra Movall, a cable-operated rear dump trailer, with interchangeable goosenecks to permit its use with Caterpillar DW20 or DW21 tractors. Features include positive cable-controlled ejection; controlled spreading; an 11- x 19-ft. target area for shovel loading; ability to dump from a jacked position; and independently controlled air brakes for locking either tractor or trailer wheels, or both. It is constructed of high strength tensile steel, and abrasion-resistant replaceable wear strips protect the interior surfaces. Struck capacity is 19 cu. yd., and 25 cu. yd. heaped.

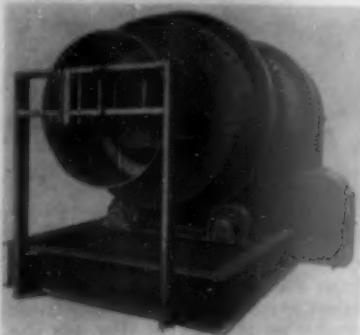


### Packaged Air Compressor

INGERSOLL-RAND CO., 11 Broadway, New York 4, N. Y., has brought out the PHE packaged air compressor, an opposed-cylinder, balanced design

driven by a direct connected, induction motor. The basic design is a two-stage unit for 80-125 p.s.i., but other cylinder arrangements are available for higher pressures or for pumping vacuums. Full-floating aluminum bearings rotate slowly thus taking the major thrust of each succeeding stroke on a different portion of the shell. The three main bearings are interchangeable.

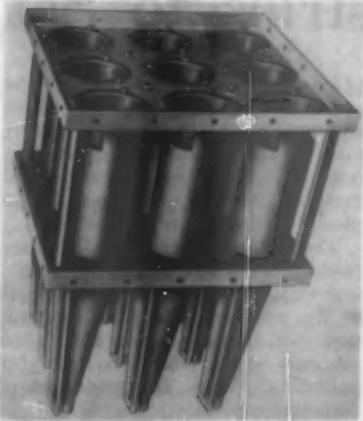
Piston and rod assemblies of equal weight, moving in opposite directions on a 180 deg. crank, are said to balance out the primary and secondary inertia forces without the use of counterweights. The crossheads are of the aluminum piston type, and valves are the "A" series channel type with "double-life" seats. Other features include a sealed crankcase; a direct-driven lube oil pump; individual, adjustable, sight-feed lubricators for cylinders and packing; water through tube intercooler between stages; and low oil-pressure shutdown.



### Scrubber

MCLANAHAN & STONE CORP., Hollidaysburg, Penn., has developed the Hi-Speed scrubber, designed primarily for the removal of loam, light clays and soft materials from aggregates. Aggregate is introduced into the scrubber through a feed hopper and chute, at which point water also is introduced to keep the chute open. As the aggregate reaches the discharge end, it falls on a chute, causing it to slide out of the cylinder onto the dewatering screen. Fresh water is also introduced at this end to help rinse the aggregate on the dewatering screen and to carry dirt and sand out through a perforated plate in the opposite end of the cylinder. The cylinder is revolved by removable steel tires which run on trun-

nion rollers. Power is transmitted by a roller chain from a 100-hp., 155 r.p.m. gear motor.



#### Dust Collector

AMERICAN AIR FILTER CO., INC., Louisville 8, Ky., has introduced the AMERclone dry granular dust collector, designed for high efficiency over a wide range of air volumes. It features a "reverse-tangent" principle, consisting of a conical inlet which imparts a swirling motion to dust particles, while permitting clean air to travel through the "Type G" tube without changing direction. Each tube has an approach velocity of 1000 f.p.m. and a cleaning capacity of 333 f.p.m. Nine tubes are combined in a standard modular cell, which has a nominal rating of 3000 c.f.m. with a 20-x 20-in. face area. Any number of modular cells may be combined to provide the required capacity within available space. Due to the "straight through" air flow design, the units are said to handle widely fluctuating air volumes and dust concentrations. The basic unit includes a secondary exhauster circuit which provides for disposal of 10 percent of the primary air, and collected dust, bled off by the tubes.



#### Off-Highway Dump Truck

DART TRUCK CO., Kansas City, Mo., has brought out a 20-ton capacity off-highway end dump truck with a 120-in. wheelbase, and a 21-ft. turning radius. It is powered by a diesel engine, 225 or 275 hp., and is available with a conventional transmission

or torque converter. Its features include hydraulic steering; and two-stage springs, front and rear, for ease of riding, loaded or unloaded, and for protection to the tires and truck. Other models recently announced are the 10S, a 10-ton capacity truck, and the 35SA, a 35-ton capacity unit with hydraulic air strut front end suspension.

#### Plastic Air Hose

BOSTON WOVEN HOSE & RUBBER CO., Extrusion Dept., Box 1071, Boston 3, Mass., has announced the "Bostrene," lightweight, small diameter, plastic air hose, for use with pneumatic tools. It is available with a  $\frac{1}{4}$ -in. inside diameter and  $\frac{1}{8}$ -in. wall, weighing 8.8 lb. per 100 ft.; and a  $\frac{3}{8}$ -in. inside diameter and  $\frac{1}{16}$ -in. wall thickness. It is colored a bright red, and is said to be flame and abrasion-resistant. The hose is designed to allow the use of lighter pneumatic tools, and to eliminate manual lubrication by permitting the use of line oilers.



#### Giant Tire

UNITED STATES RUBBER CO., New York, N. Y., has announced tires weighing 2600 lb. and 8 ft. diameter for use on huge earth-moving and strip mining equipment, bottom dump trucks and self-loading scrapers. The tires, designated U. S. Royal Con-Trak-Tors, are 30.00-33 in size; have a 40-ply rating; and have a full lug tread design nearly  $3\frac{1}{2}$  in. thick.

#### Electrodes

PACIFIC WELDING ALLOYS MANUFACTURING CO., 310 North Avenue 21, Los Angeles 31, Calif., has brought out the "Phoz-Bronze" line of electrodes for welding brass, bronze, copper, cast iron and steel in flat, vertical, overhead and horizontal positions. The electrodes are a combination of phosphor bronze welding rods with a heavy black coating, and are said to be cor-

rosion-resistant, of high strength and have a low melting point. A steady flow of metal through the arc is permitted due to the protective coating, providing a soft stable arc and low spatter. The phosphorus content serves to deoxidize the weld metal during the welding procedure. The electrodes can be used where extensive preheating is not advisable, and with direct current, reverse polarity. End grips are supplied with the electrodes, which operate best under low amperage and high voltage.



#### Crane Carrier

SCHIELD BANTAM CO., Waverly, Iowa, has announced the Bantam "200," 6 x 6 crane carrier for mounting of the Model T-35 power crane-shovel. The carrier features a GMC 6-cylinder engine, radiator, one-man cab, brake system, instruments, and other assemblies. It has a road speed of 40 m.p.h., a two-speed transmission with 10 forward speeds, two reverse, and a six-wheel drive for extra traction.



#### Portable Primary Crusher

PIONEER ENGINEERING WORKS, INC., Minneapolis 13, Minn., has brought out the Model 150 PRS, a portable primary plant, which utilizes a screen ahead of the primary crusher to bypass material already down to size. The plant has a 36-in. x 10-ft. apron feeder, a 4- x 6-ft., two-deck, four-bearing vibrating screen, and a 2036 roller bearing jaw crusher. It is mounted on a pneumatic-tired chassis. In the event of clay build-up, the carrying plate may be removed, allowing the fines to pass directly into the hopper of the reject conveyor. The conveyor can be installed to deliver out either side of the plant. On or off plant power is optional, as is a front bolster for towing, or a Fruehauf pin for truck tractor.

# ROCK PRODUCTS Industries to Set

**I**N THIS REVIEW OF BUSINESS CONDITIONS in the rock products and concrete products industries for 1954 and in our endeavor to forecast the outlook for 1955, we have drawn from many sources of information in addition to a generous number of letters from producers in response to our request for information. We take this opportunity to thank all those who took the time to answer our letters.

The year 1954 was better than predicted for these industries due to establishment of a new all-time dollar volume construction record. Construction apparently increased about 5 percent over the all-time high of 1953. Predictions had been made a year ago that volume of construction would be slightly lower than it was in 1953.

Volume of business was generally higher for the rock products industries with a few exceptions, of course, and prices held firm. Price increases were the exception and there were some instances of lower prices in the face of higher costs, due to stiffened competition and resistance to price rises by consumers.

Among the exceptions to increased or equal volume of business, comparing the years 1954 and 1953, were producers adversely affected by local conditions such as many new competitive operations or where large projects have now been completed. Industry exceptions included the agricultural limestone industry and producers of foundry sands. Reductions and changes of the regulations in the federal soil conservation program affected agricultural limestone producers adversely. Some softening of industrial production and inauguration of sand reclaiming practices in some foundries reacted to the disadvantage of the foundry sand industry.

All the rock products industries, including agricultural limestone, are looking forward optimistically to improved business conditions in 1955. Appraisals of producers are backed up by very encouraging forecasts for business generally and construction in particular.

## General Business Conditions

Practically all forecasters on business matters say that economic factors all point to business gaining in strength. They believe that the congressional elections will have no adverse effect on government policies which are encouraging to private enterprise, that the slight recession of 1954 is over and that confidence in the future is strong. Volume of total national business in 1955 is expected to top the 1954 total by possibly 2 percent, but not 1953, and markets will be more competitive than at any time since World War II.

Cutbacks in capital spending are ending and industry overall is planning large outlays for new capacity now without the spur of a defense boom. Industry plans to spend close to \$21 billion on new plants and equipment, which is only a few percent less than in 1954, and expects a pickup in sales for 1955 and 1956. New investments will be aimed principally to reduce costs and to produce new products. Potential gain in the gross national product will exceed 1954 and may equal the record of 1953.

Costs of living are expected to stabilize in 1955 although there is probability of hourly wage increases and there will be a drive on to shorten the work week. Also, fringe benefits likely will increase. Liberalization of allowances for depreciation is exerting a stimulating effect on all business in-

vestment and will induce more of the smaller companies to spend for plants and equipment. The start to cutting taxes on profits is also an encouraging note. Inventories had been reduced through 1954 and purchases to replenish inventories are on the rise.

There may be pressure for more public power and reclamation projects, and various indirect means on the part of the government to stimulate business will come into play if the economy should show the need for bolstering. Money and credit are in favorable supply.

Excess profits taxes are not likely to be revived unless there should be a war emergency. The 52 percent tax rate on corporation earnings expires early in 1955 and, according to the law, should return to the 47 percent level. There is likely to be debate on that and there is possibility that the higher rate may be extended.

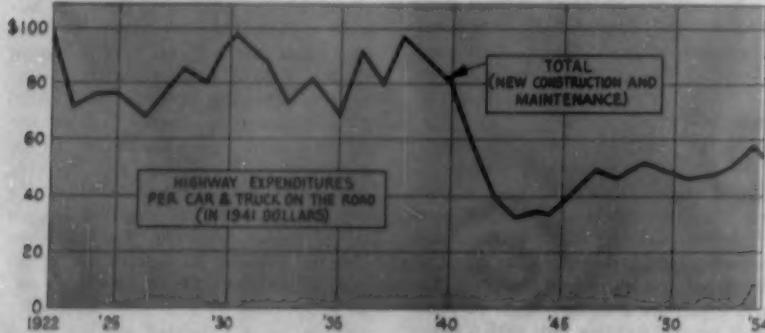
Minimum wages may be increased as business volume increases and, of course, unions and liberal democrats will seek a big increase. Any radical changes to the Taft-Hartley law seem improbable. In view of the many recent mergers in industry, business practices likely are in for attention by the government.

## Construction

Forecasts of construction by leading authorities anticipate that dollar volume of construction in 1955 will increase by 6 or 7 percent over 1954 performance and that physical volume will increase by 5 percent. The Department of Commerce and the Bureau of Labor Statistics forecast \$39.5 billion of new construction in 1955 which is about 7 percent higher than in 1954 which ended with \$37 billion. Incidentally, 1954 construction exceeded their estimate of a year ago by about \$3 billion. For comparison, the level of construction was \$16.7 billion in 1947.

Both private and public construction are expected to increase with private construction up 7 percent to \$27.4 billion and public construction totaling \$12.1 billion.

Privately financed construction is expected to have its biggest boost from non-farm residential building which will go up 13 percent to \$15 billion, for 55 percent of all private construction. Stimulated by the strong demand for new homes and because of readily available mortgage money and easier



Showing highway expenditures per car and truck on the road from 1922 to 1954.  
Source of data is the U. S. Bureau of Public Roads.

# New Records

credit terms, it is predicted that there will be 100,000 more housing starts in 1955, than in 1954, to total 1,165,000 units.

Commercial construction will increase from \$2,155,000,000 in 1954 to \$2.3 billion in 1955 with the emphasis on stores, shopping centers and offices to serve new housing developments and suburban growth. New industrial construction will decline slightly for the third consecutive year to \$1,850,000,000. The increase forecast for public construction reflects expansion for nearly all types of state and local public works. Highway construction, according to these agencies, will total \$4.2 billion which is an 18 percent increase, and military construction will increase by 18 percent.

Forecast of *Architectural Forum* is that construction expenditures will reach \$39 billion in 1955 as compared to \$36.9 billion in 1954. This forecast is that residential building will account for most of the increase and that private construction will advance \$1 billion or 4 percent and that government construction will increase by 8 percent. A 25 percent increase, or about \$1 billion, is predicted for highway construction in 1955. Among other gains will be 7 percent for public school building and slight increases for public hospital and institutional construction. Declines are forecast for four government categories including public housing, industrial (atomic energy) construction, conservation and development, and miscellaneous public service building.

F. W. Dodge predicts 1,250,000 housing starts in 1955, general increases in most categories and that there will be \$1 billion a month of alterations, repairs and modernization of existing structures. The total estimate is a 6 percent increase in dollar volume of construction.

The trends in construction reflect the mounting pressures stemming from rapid population growth and the high productivity of the economy.

Speaking before a meeting of The National Association of Mutual Savings Banks, chairman Melvin H. Baker of National Gypsum Co. presented some revealing figures to point up reasons for an "incredible" economy to come. The rate of population increase, he said, is the equivalent of adding a city the size of Syracuse, N. Y., each month or one the size of Los Angeles each year. By the end of the

Highways, commercial and home building to set pace for \$39 billion overall construction program. Producers contemplate installations to increase capacity, improve quality and extend markets

By BROOK NORDBERG

1950's, a bumper crop of wartime babies will enter the consumer age bracket which, combined with the accumulated results of research, will set off a vastly-expanded economy in the 1960's.

Housing is the key to the economy in his opinion. Nine million homes have been built since World War II. Sixty-seven percent of homes are more than 20 years old and in need of replacement, 1.2 million people a year are moving to suburbs and setting up demands for homes, churches, schools and all manner of facilities. Other indicators mentioned were a need for \$40 billion for schools, a continuing need for \$40 billion minimum per year for defense spending, that two of every three miles of roads and streets are inadequate and an increase of from \$68.5 billion to \$250 billion in savings since 1940.

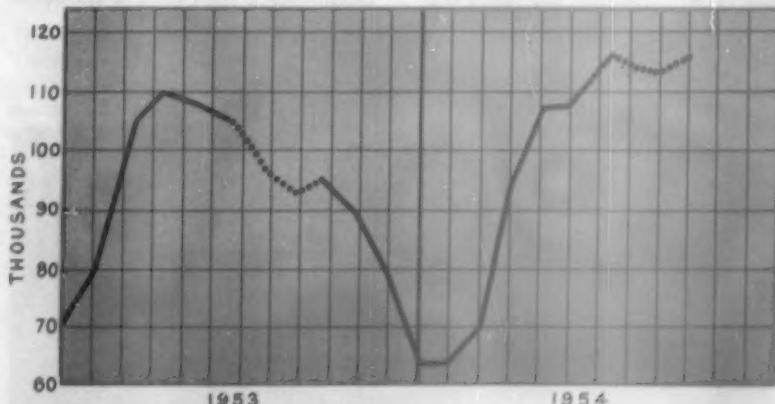
Heavy construction volume will likely exceed 1954 by 6 percent and it is estimated by some authorities that the backlog of such work is now more than \$70 billion. There is more of this type of work on the boards of engineers and architects than a year ago, and voters in November, 1954, ap-

proved issuance of bond issues in excess of \$1 billion mostly for construction which have not yet shown up on the books.

In spite of the high level of construction, there still is plenty of room for further expansion according to economists. They say that when the growth of the nation and construction costs are considered, the volume today is well below the peaks of 1926 and 1927 when the dollar volume was about \$12 billion annually. Construction costs have tripled since then which, considering population growth, shows that construction per capita in 1927 was twice as great in 1954. Therefore, they say the level now is well below speculative boom proportions.

## Roads

Unprecedented public interest in the modernization of highways and roads will reflect in greatly accelerated new construction in the immediate years ahead, and in endorsement of the federal administration's proposal for a vastly expanded program. Annual expenditures on the maintenance and improvement of the nation's highway



Curve of housing starts in 1953 and 1954. The summer sag in both years is indicated by dotted portion. Data was made available by the U. S. Bureau of Labor Statistics



One of the new plants in the East is MacKenzie Sand & Gravel Co., Clifton Springs, N.Y.

system have only increased 18 percent since World War II while the number of vehicles has increased 71 percent, and will increase another 15 percent by 1970, and the wide discrepancy is now fully recognized.

In 1954, the highway construction total increased roughly 30 percent over 1953 to about \$4 billion for actual road building which is a new all-time record but still far short of needs. There were 38,000 miles of roads completed, according to the Bureau of Public Roads. The figure for 1955 will increase substantially when an estimated 46,000 miles will be built.

Federal endorsement and support will soon accelerate the increase in road building if the government's favorable attitude prevails, which is most likely because of public support. The government wishes to wipe out national insecurity from obsolete roads and recognizes that benefits to public safety resulting will far outweigh the costs.

The president's proposal of a \$50 billion highway building program over a 10-year period, over and above normal construction, has had much pub-

licity. That figure likely is far more than the definite proposal to be presented to Congress but it does represent the thinking and a long-range goal that would bring the total to \$101 billion spent through 1964. Surveys have indicated that equipment manufacturers, materials suppliers, contractors and engineering personnel have the capacity to carry the program through. The \$50 billion program would require an estimated \$280 million of aggregates, \$180 million of cement, \$95 million of ready-mixed concrete and \$65 million of concrete culvert pipe, according to preliminary estimates.

Another favorable development that will give stimulus is the Federal Highway Act of 1954 which authorized \$1,930,000,000 for grants to the states for fiscal years 1956 and 1957 which is the largest 2-year sum yet authorized.

There may be many more miles of toll roads built but, thus far, the approximate 2500 miles in use, under construction or planned, amounts to less than  $\frac{1}{4}$  of one percent of the surfaced roads in the United States. Some

10,000 additional miles are either authorized or proposed and three out of four states are making plans.

Producers of all types of rock products and concrete products were very generous in reply to our letters requesting comments relating to business conditions and subjects of particular timeliness. Separate letters were sent to the different industries directed to their specific problems and herein we summarize these letters from all branches of the rock products industries. Separate articles covering the concrete products and ready-mixed concrete industries are published in the Concrete Products section of this issue. Business conditions and prospects for the portland cement industry are summarized in a separate article herein:

#### Sand and Gravel

All producers were asked to comment on how 1954 volume of sales and prices compared with those for 1953; the outlook for business in 1955; plans for plant enlargement and modernization; significant changes in market distribution; and handicaps to doing business.

As far as business is concerned, 38 percent of replies to our letter were that volume of business was better in 1954 than in 1953. Fifty percent reported equal volume and 12 percent had reduced tonnage. Those reporting increases in volume ranged from 5 percent to a peak of 30 percent, the exception being a producer who doubled volume. The average increase was probably ten percent. In 90 percent of the cases, prices had gone unchanged. In the remainder, there were modest increases, the top being 7 percent.

Sixty-three percent anticipate increased volume of sales in 1955, 30 percent anticipate no change and only seven percent expect a decline. As to distribution, there will be more tonnage moved for highway and residential construction. Prices are expected to maintain at 1954 levels even though they are not keeping pace with rising costs. Reduced volume is anticipated mainly in areas where large projects created extraordinary demand in 1954. One producer mentioned that he feels required to enter the ready-mixed concrete or bituminous concrete business in order to build a market for a "finished product." A few producers reported that they cannot promote greater sales unless new sources of material be made available for processing. Profits have suffered for some time due to increased costs of labor, equipment and repair parts.

Conditions are expected to be much more competitive, with increased costs for all producers the only deterrent to



A recently completed, enclosed plant of Superior Sand, Gravel & Supplies, Ltd., Toronto



**Grey Cloud plant** of J. L. Shiely Co., in operation near St. Paul, Minn., produces many sizes which are blended on a reclaiming belt conveyor below bins. Nearly entire production is hauled from plant to distribution yards in company barges on Mississippi River

price cutting in some areas. The competition is to be met by stepping up capacities to reduce unit costs, increasing sales effort and rendering better service. There are a number of instances where asphalt paving plants will be added to use up excess gravel sizes, to produce asphalt sands, etc.

There will be considerable investment made in plant facilities in 1955 both to enlarge production and to effect cost reduction. Many installations also will be made to improve quality of product and to keep pace with specifications, as producers mentioned in their comments on depletion.

Far more new plants and enlargements of plants will be accomplished in 1955 than in 1954. There are also instances where portable plants will be added to augment production from stationary plants. Some plants will be doubled in size. A number of companies are planning to produce ready-mixed concrete. One company in Iowa plans to install a heavy media plant to remove unsound particles from gravel. At least 80 percent plan to install equipment, either for new plants, enlarged production, improved quality, reduced costs or as a continuing practice of modernization.

Among comments on business conditions and plans for installation were the following:

#### WASHINGTON STATE:

"Our volume of business in 1954 was about 10 to 15 percent greater than 1953. Prices of sand and gravel edged up slightly, probably not to exceed 3 to 5 percent. The outlook for 1955, both volumewise and pricewise, is good."

"There was one brand new sand and gravel plant built in this area in 1954 and during 1955 there will be another new plant constructed, and in our own case we expect to do ex-

tensive modernizing on our largest plant.

"Without going too deeply into sales records, I would guess that our business this year was composed of approximately 25 percent public money, 25 percent housing and 50 percent industrial and commercial."

#### NEW YORK STATE:

"Business volume in 1954 was about the same as 1953. We look for a decrease in 1955, as certain large projects in this area were completed this year."

#### MARYLAND:

"The volume of business and the prices in 1954 are about the same as in 1953. As to the outlook for 1955, we expect a 20 percent increase in tonnage, with the same price level being held. We have at the present time plans for the modernization of one plant which will cost somewhere in the neighborhood of \$100,000. Road construction is 50 percent of our business, while ready-mixed concrete and sand and gravel for asphalt paving accounts for the other 50 percent."

#### TEXAS

"Our volume of business for 1954 looks as though it will be between 10 percent and 20 percent ahead of the calendar year 1953. The outlook for 1955 looks very good at the moment, even though, in our particular business, we might be somewhat below 1954."

"We contemplate a complete modernization and enlargement of our major sand and gravel plant, and a modernization of at least one of our small movable plants. The modernization will enable us to produce better grade sand as well as gravel. We also anticipate modernizing our crushed stone plant to produce stone of a better

gradation than at the present time, as well as a larger output."

#### MICHIGAN:

"Sales volume will be up 10 to 20 percent in 1954 over 1953. We expect 1955 to increase about 20 percent over 1954 for our products."

"Prices have not kept pace with rising prices and costs of manufacture. No hope for bringing prices in line with increased costs of the past five years. It is possible that we may double our production facilities."

"Principal handicap to doing business is price cutting policies of competitors. Also their policy of operating at a low margin of profit to stifle competition allows the smaller companies no opportunity to set aside reserves for purchasing new gravel deposits (which are rapidly becoming depleted). Percentage depletion is the only break the small producer in a tight competitive market has to set aside money for buying more gravel at higher costs. If producers would reflect the replacement costs of gravel in their costs, instead of actual costs of gravel that was purchased somewhere back in the depression, the situation would not be so crucial."

#### NEW YORK STATE:

"Prices were lower in 1954 than in 1953. Demand in 1953 in our immediate area caused prices to remain up. The outlook for 1955 will be better than 1954, but we are faced with the fact of getting into something that will create a market for our materials in the way of a finished product. It will be ready-mixed concrete or blacktop."

#### ILLINOIS:

"Volume of gravel sold and price have been consistent for the years 1953 and 1954. Without new aggregate development, we do not expect

to do further promotion of gravel sales in 1955. We will build a new gravel plant on nearby acquired acreage at the earliest possible time. This will probably be in 1955 or 1956. The first stage of this building program will certainly start in 1955.

#### LARGE MIDWESTERN PRODUCER:

"Our business volume for the year 1953 as compared to the year 1954 is about the same and we anticipate that 1955 will give us increased tonnage. This is due to the expanded road programs in the various areas in which we operate. Our price structure has remained about the same. We find it impossible to increase prices, although there is a justification for an increase, but the market resists it so strenuously that we are unable to put these increases into effect.

"About 85 percent of our production goes into the construction of roads and into industrial building, about 5 percent in home building, and about 10 percent in railroad ballast."

#### NORTH CAROLINA:

"Specification trends have caused us to adopt new operating practices. We have bought new equipment which helps us to eliminate soft particles in our gravel, we have bought additional equipment to help us screen to finer tolerances, to help us clean our material more thoroughly, and we have completely rebuilt and redesigned our sand plant operation so as to give greater production and greater gradation control. Our volume of business for 1954 is slightly less as to our gravel sales and as to our road base material sales, but our sale of railway ballast and our sales of concrete sand have been greater than our 1953 vol-

ume. We feel that the year 1955 will see competition in our part of the country much keener than it has been for some time, inasmuch as there are more plants in operation in given areas than formerly. We do not anticipate that the volume of available business will be greater, therefore there is bound to be a reduction in sales for all concerned, inasmuch as there are more plants among which to divide the business volume. We believe, however, that prices will be fairly firm inasmuch as production costs are such that very few operators today would like to precipitate a price war."

#### IOWA:

"Prices have remained the same and volume was somewhat less. Outlook for 1955 is about the same as 1954. We are planning to put another barge and pump into operation in 1955 and will construct a ready-mixed concrete plant in conjunction with our present operations."

#### MICHIGAN:

"We have doubled our 1954 sales over 1953, both in dollar and tonnage, since we have not increased any prices. Beginning in April, demands for Michigan state specification sand and gravel were such that we were forced to go from two-shift to three-shift production.

"The outlook for 1955 is such that we are converting our 8-in. dredge and processing plant to a complete 10-in. dredging operation as soon as weather conditions freeze up the pumping operation. The new plant is scheduled to be ready to produce March 1, 1955.

"About 40 percent of our sales are

to either the state highway commission for road building or to the local counties for building or resurfacing 'black-top' roads. Another 40 percent of our sales are to block plants and ready-mixed concrete plants. About 10 percent of the sales go to independent truckers (marked for resale) with the apparent destination being individuals who are improving their own homes. The last 10 percent is sold directly to individuals who (since we do not maintain a delivery service) buy the sand and gravel they want at the plant and bring their own means of transportation for the material.

"It would appear that this trend would continue unless our customers find themselves hampered by an anticipated cement shortage in this area, brought about by the construction of the Indiana east-west toll road. We, as a company, are not interested, however, in producing any of the aggregate materials necessary for the toll road.

"We have not been affected by competition, since fortunately for us, we are the only suppliers of Michigan state highway specification sand and gravel in about a 45-mile radius of our plant. We maintain a standard of the highest quality material possible thereby keeping the confidence of the Highway Department and contractors.

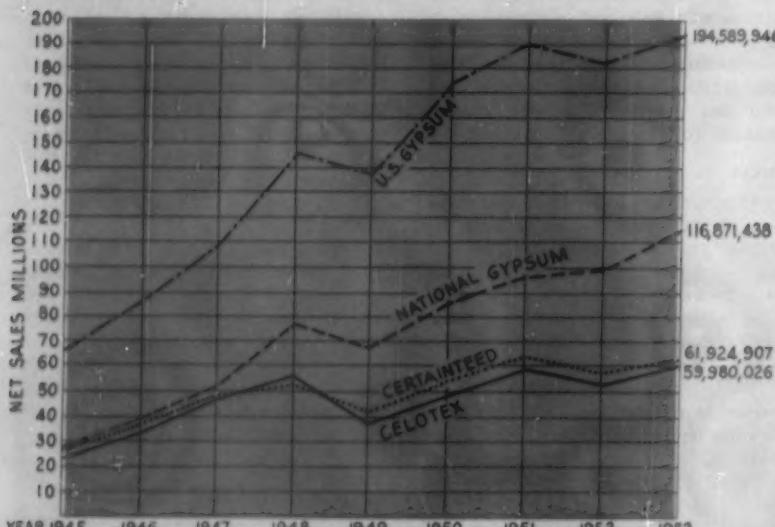
"Our percentage of sales in relation to our maximum productive capacity is 100 percent for all gravel (pea stone, 6A, 10A, 1/4-in., 4A, etc.). In sand production, however, we pump and waste about 62 percent since our present market for salable sand is only about 38 percent of the tonnage processed (mason sand and concrete sand).

"We are planning changes in our proposed conversion to include larger scalping tanks for more complete control of sand. If successful, this will enable us to produce asphalt sands in addition to mason and concrete sands. We have a market waiting for asphalt sands at present, since all asphalt sands used within a 50-mile radius of our plant are shipped in from outside sources by rail. If we are able to find an additional market in Chicago or Toledo for sand, we may consider putting in a rail siding."

#### MISSISSIPPI:

"I think we will wind up 1954 with a volume and an average price that will be about equal to 1953. There may be a little more volume tonnage-wise but the dollar volume might be off slightly.

"We expect 1955 to be one of our best years from a standpoint of tonnage volume. We don't look for much drop in price. There certainly should not be any lessening of prices. Equipment, repair materials and labor con-



Graph showing the progressive increase in sales of gypsum products by four of the leading producers from 1945 to 1953

tinue to inch up faster than we can get our prices up. Manganese steel was increased 7 percent recently, labor is up about 5 percent and repair parts are up from 5 to 10 percent. Our 1954 profits will be about 10 percent less than 1953 on practically the same tonnage and dollar volume.

"We plan to continue to up-grade our equipment as we have for the past four years. There will be small expansions here and there but no extensive rebuilding program. Modernization of equipment has increased our plant capacity considerably."

#### IOWA:

"We have had to adopt new operating practices because of specifications. We are this winter installing a Wemco Mobil-Mill heavy media gravel preparation plant, mainly because of the tightening up of specifications beyond what was required for highway work.

"We expect the volume of business to be equal and the prices to be a little better because of the improved quality of our product in 1955 over 1954. A large percentage of our business is in commercial construction and house construction, and the principal handicaps that we have are the steadily rising prices of labor and replacement parts."

#### Deposit Depletion

Depletion of deposit reserves has become a serious problem to the sand and gravel industries so we sought comment on that subject, in addition, from sand and gravel producers in an attempt to determine the extent of the problem. The industry has been producing at a rate in excess of 400 million tons annually and much of it close by metropolitan areas. The problem has been aggravated by zoning regulations and because specification requirements have continued to become more rigid, thus restricting the use of some reserves that might have been satisfactory not so many years back.

Serious shortages of quality materials have been reported in lower Michigan, Nebraska, through parts of the southwestern states and in many local areas, but the problem has proved to be just as serious in many other areas because of restrictive ordinances forbidding operation where otherwise acceptable material might be excavated and processed. Specifications have ruled out many an otherwise strategically located deposit; in some instances producers have had to work more remote deposits to the financial loss of the customer, and there is evidence of much more expensive-type beneficiating processes being installed in order to exploit



Valley Limestone & Gravel, Inc., has built a new gravel plant at Farmington, Iowa

otherwise unacceptable material.

Most certainly, exploration and development costs have increased which is born out emphatically in our letter returns, and selective excavation and special processing have added materially to costs.

A summary of letter returns showed that fully 60 percent of a considerable number of producers have reserves that are inadequate. Of the 60 percent, a very few have deposits which are estimated to last 15 or 20 years but the large majority have deposits that will be exhausted in from 2 to 3 years up to 10 years. These figures no doubt reflect the current rate of use, but demands forecast for construction will cut into them more rapidly. There is also question as to whether reserves have the quality throughout to pass specifications or specifications to come which set even higher standards.

Some companies have had to hire full-time crews for exploration and development, and many are doing much of that work even though they do not yet face exhaustion of reserves. In growing metropolitan areas, large areas of good quality material have been reduced to small areas due to the encroachment of residential areas and producers are being pushed farther and farther away from their markets. Some are not permitted to start operating properties previously acquired by lease or purchase. Good deposits have been lost due to changed specifications, and more and more concessions must be granted to control bodies in exchange for permission to operate plants.

Among the comments were the following:

#### WASHINGTON STATE:

"At the present time, we have sufficient sand and gravel reserves to guarantee operations for approximately 20 years. That sounds pretty good but we have been in the ready-mixed concrete business for 25 years and, looking back, that does not seem a very long period of time. As this is a growing community and growing section of the country, we can expect our annual tonnage to increase, hence, we will probably end up with something

less than the actual 20 years' reserve supply.

"We are presently looking for additional reserves but it is proving to be quite a difficult undertaking. Our last property was purchased 12 years ago. This purchase was made in an area where there is abundant sand and gravel, however, during the past 12 years this property has largely turned to residential uses.

"While there is a very large area suitable for sand and gravel operations, of the total area, zoning restrictions will probably permit operations at the present time in not to exceed 10 percent of that potential. As more residences are built, that 10 percent will shrink to probably somewhere in the neighborhood of 3 to 5 percent of the total land available for our industry. That is why we are now in the process of attempting to get additional land and have it zoned for future operations.

"Because of the nature of this particular area, exploration and development work is not a major problem. There have been sufficient deposits worked that the quality is pretty well known. By the same token, specifications are no great problem. The quality of the material and its grading is well known.

"In areas which have been built up as residential property, there is just no possibility of starting a sand and gravel operation. Our zoning commission is quite progressive and is trying to hold some of this particular property for industrial and manufacturing uses. Residential building, however, is outstripping the industrial demand for the property, and unless the industrial and manufacturing demand for the property develops in the immediate future, the zoning commission will have difficulty in keeping residential construction out of such areas."

#### ILLINOIS:

"Our deposit would now be depleted had we not acquired additional acreage. Zoning restrictions are a factor in our future development. We do not know at present whether the county will issue a building permit to set up a new plant on the land we now own.

At present, we are using aggregate from the new site and processing it at our present plant.

"It is far more difficult to obtain an aggregate supply now than ten years ago. There is a latent protest against use of land for aggregate supply development. This is noted generally in our town. The only reason specific objections have not been evidenced is the fact that no new development has taken place in this area since 1935. Gradually deposits now in existence will disappear and protests will be very verbal we are certain."

#### MIDWEST (multiple plants):

"We feel that we have sufficient reserves to guarantee continued operations, but it is difficult to say how long these reserves will last. We are constantly attempting to acquire additional lands for our operations. For example, certain lands which we anticipated five years ago would last 15 years, we now estimate that these reserves will last only eight years. This is due to the increased demand for sand and gravel during the last five years, which has hastened the depletion of the reserves that we had at that time. Therefore, how long these reserves would last would be based upon the demand for our products in the future years. Because of the additional business, such as the building of turnpikes and the expanded road programs, we are constantly revising our reserve figures.

"Zoning problems always confront this industry and naturally we are acquiring additional reserves to protect our future operations at the various plants and to escape certain zoning restrictions. We are beginning to find that the more rigid specifications are presently affecting us in only a minor way but could very easily affect the amount of gravel that you could take out of any deposit.

"There are always a multiplicity of objections which arise with respect to zoning, but we find that the most prominent objection is that the mining of sand and gravel leaves scars and unsightly pits in the ground. We, as you know, have a rehabilitation program operating in connection with our mining activities and we find that this is a great help to us to reduce this objection.

"Constantly changing of specifications has presented us with a problem. It has forced us, naturally, to adopt new operating practices and procedures, but this mainly calls for changes in screens and crushers and usually does not affect any pit operations. We anticipate within the next five years that specifications will change more drastically than they have in the past five or ten years."

"We are compelled to do much more exploration and development work than was necessary ten years ago, or even two years ago. The denuding of the trees, the hazard of trucks hauling on the roads, and the objections of property owners to living beside excavations such as we have, claiming depreciation of their property values, are the principal complaints."

#### NEW YORK STATE:

"We have reserves that will last approximately ten years. There are additional reserves in the area. Whether they will meet State approval is the question. We have not had to do any exploratory work yet. So far we have not been affected by zoning. Specifications are becoming stricter each year. We are continually adding new equipment and practices to make a better product."

#### TEXAS:

"We certainly do not have sufficient reserves to guarantee continued future operations, and we are woefully short in the entire southwestern quarter of Arkansas, and the northwest  $\frac{1}{2}$  of Louisiana. Our situation in some areas, such as Dallas-Fort Worth area, is almost desperate.

"We have had considerable difficulty due to zoning, and we have been deprived of some valuable deposits on this account. We have also recently lost a large deposit, at the moment at least, on account of rigid specifications. Both of these items are becoming most serious and more difficult each year.

"Our exploration and development work is probably three times as great as it was 10 years ago.

#### NORTH CAROLINA:

"At one plant we have estimated reserves for 50 to 100 years; at two other plants we have reserves at one for ten to 20 years, and reserves at the other from five to ten years.

We have had to acquire additional reserves for future excavation in order to protect our business due to more rigid specifications, however, zoning restrictions have not so far given us trouble. Ten years ago we did very little exploration and development work, whereas now we keep a team of men busy exploring and developing."

#### ILLINOIS:

"For sometime, as you may know, we have operated sand and gravel pits at six locations. One deposit will be exhausted this year and we haven't more than two years to go at a second. A third will probably last seven or eight years. We still have about 20 years to go at two other locations.

"We have just acquired a new deposit of 320 acres near the exhausted property. We expect to erect a new plant there within the next year. We had considerable difficulty with the village officials and the county board in getting this property zoned for heavy industry. The village officials felt that a sand and gravel pit would constitute a blight on their neighborhood and we had to make many unusual concessions. I might add that the village officials also objected to the additional truck traffic that would be created at the approach to their town.

"We do have to do more exploration and development work than was necessary ten years ago. There are not many good deposits located near the railroads, which means that place utility values are not so good. We have also found it advisable to thoroughly test any deposit we may be considering."

#### NEBRASKA:

"Yes, we do have sufficient reserves to guarantee continued future operations. We have not been required to secure additional reserves for future excavation in order to protect our business, due to zoning restrictions and of more rigid specifications. We are compelled to do more exploration and development work than was required 10 years ago."

#### MISSISSIPPI:

"As for reserves to guarantee future operation, sufficient gravel is in sight for several years to come but the deposits are not as desirable; that is, more overburden, shallower veins, farther away from railroads and highways and other undesirable features. Naturally we spend more time and money looking for the better deposits than we did ten years ago.

"We have recently acquired additional deposits, which we will probably be forced to work within the next few years. These deposits are farther from the railroad than our present deposit. They are in such position as to create 10¢ per ton additional freight rate as compared with our present operation.

"So far we have not experienced zoning regulations in this area, however, our city has recently zoned certain types of business out of the city limits. We might be their next target even though we are not in the city limits.

"Specification trends for the past ten years have been more exacting, however, the plant that has kept its machinery along with the specification requirements, has not been hurt too much. Tight specs is one of our best advantages over the 'gopher-hole' producer."

**TEXAS:**

"We have sufficient sand and gravel deposits for approximately 12 years of operations, at our present level. We have acquired stone deposits within 50 miles of our market, which should take care of our requirements for approximately 50 years.

"We have been on the lookout for additional reserves of sand and gravel for future acquisition, inasmuch as the city has expanded so rapidly that the zoning restrictions have prompted the mining of some of our existing deposits.

"I doubt if we will do more explora-

tion and development work than was necessary, say, ten years ago, because in this area most deposits of sand and gravel are pretty well known.

"The specific objections that have arisen with respect to zoning are primarily in the nuisance class—dust, noise, unsightly land after the deposits have been removed, etc. On new acquisitions we are committing ourselves to a more careful operation and rough grading upon completion of our excavation.

"The trend towards more rigid specifications has influenced us in the direction of better washing and grad-

ing methods than we have been using in the past. In fact, it is our intention to erect an entirely new plant with sand classifying equipment and better screening facilities in order to be ahead of this trend."

**MARYLAND:**

"We have limited reserves for possibly 20 or 25 years hence. We have had to acquire additional reserves, due mainly to zoning restrictions. In fact, a lot of land that we were holding for reserves is becoming subdivision property and we are being pushed farther and farther out.

## CRUSHED STONE Producers Look for Better Year

- Seventy-nine percent of producers anticipate increase in volume of crushed stone business in 1955

**C**RUSHED STONE PRODUCERS have stressed the need for greater emphasis on cost control in a market that is experiencing keener competition all the time, and the need for accelerated effort in the promotion of sales.

A summary of letter replies indicated that the industry maintained a high volume of business in 1954 and that the majority anticipate higher sales in 1955. Performance in 1954 apparently was not as favorable as for the sand and gravel industry but 40 percent of our correspondents reported increased volume in 1954, 27 percent had sales about equal to 1953 and 33 percent had reductions.

Fully a third of our replies indicated reduced prices in the face of operating costs that in most cases have increased. Price reductions ranged from a few percent to as high as ten percent, mainly in midwestern agricultural states. It is assumed that the curtailment in sales of agricultural limestone in these states was a factor. The top price increase reported was ten cents a ton in New York State by producers supplying crushed stone for the New York Thruway where demand had been extremely heavy in 1954.

A marked upturn in volume is expected by the industry in 1955, with 79 percent of the companies anticipating increased volume. Only 14 percent expect reduced volume and the balance will hold at 1954 levels. No material adjustments in prices are expected.

Producers who have been supply-

ing the New York Thruway say that their tonnage for highways will decline in 1955 but with compensating increases in other markets. The majority overall anticipate more sales for road building. In Kentucky, a marked increase is predicted in supplying paving contracts for the 40-mile divided lane toll road to be put under construction.

Fluxstone volume declined with the drop-off in steel production in 1954 but such producers had off-setting increases in concrete aggregate and other sales. Increases in road stone were reported by some producers who suffered declines in agricultural limestone sales.

Agricultural limestone sales were adversely affected for a number of reasons and tonnage continued to decline. The reduction was about 32 percent comparing 1953 with the peak year of 1947 when 30.2 million tons were spread, and there was a further decline in 1954. Declines in 1954 ranged all the way from 10 to 75 percent but there were compensating increases in other cases. A Florida producer, who only produces agricultural limestone, reported a 25 percent increase in volume.

The mandatory soil test was the most important single factor in losses of volume in 1954. Insistence by the government on having farmers first



Long stockpiling conveyor of Columbus Rock Co., Columbus, Ga., has three belts



**Deerfield Rock Corp., Deerfield Beach, Fla., has an interesting plant set-up for the production of stone sand. A water scalping tank sizer, sand screws and special rotary screen are used in making masons sand.**

qualify for conservation payments by requiring soil tests and the inadequate facilities for such tests, accompanied by all manner of administrative red tape, was a serious road block. Drought conditions and reductions in farm income were contributory.

Where tonnage was held up in some states because of inability to get the job of soil testing done, and farmers were permitted to order two tons of material in lieu of soil test, volume of sales was much improved as compared to cases where analysis was required.

The fact that more agricultural limestone was sold without federal aid indicates that the trend is upward in privately financed liming. Another favorable item is that mandatory soil testing will be better organized in 1955 so that the job can be done. There are suggestions in the wind that limit federal payments to so-called permanent conservation practices, which might exclude liming, pointing to the need for more sales and educational effort directed to the farmer. The agricultural need is for 80 million tons annually.

Nearly all crushed stone producers are experiencing keener competition for business which explains why one-third are getting lower prices. The stress is to be on further cost reduction and improved service in order to meet the challenge. A number of producers have stepped up personal contacts with customers and are improving operations to increase quality and for more accurate sizing of materials. Increased production in order to reduce unit costs is the approach by some.

More roadside competition and the delivery and acceptance of off-specification material from such operations is hitting some established producers, particularly in midwestern states, some of whom blame small owner-operated

plants for price cutting. This competition is being met in several ways. Some producers are supplementing their facilities with portable production units to go out and meet this competition. Others are restricting their own activities into smaller areas in order to hold down delivered prices. A producer in Illinois has built a sand and gravel plant to meet the competition of cheap gravel and so that he will have available natural sand to go with his crushed stone in order to fill concrete aggregate orders.

Ratio of sales to productive capacity is relatively high. Almost one-third of producers reported that they sold all the crushed stone they could produce in 1954. Some have had peak periods at overtime labor rates. A large majority had sales in the 60-80 percent range of available capacity. The average overall was about 80 percent.

There has been considerable emphasis on developing new markets and new products. Several producers have started the production of manufactured sand. An operator in Georgia is having excellent results in selling this new product to concrete block plants. Those with a stone amenable for the purposes, are working on the development of grit products and others specially suited to chemical uses. Some are producing a greater number of sizes of crushed stone to widen their markets, and there are instances of crushed stone producers entering the ready-mixed concrete field.

Expansion to increase total plant capacity is to be undertaken by a relatively small proportion of producers, but there will be considerable investment in rehabilitation and modernization, and to produce more products in the smaller size ranges. A good number of producers are planning to add secondary crushing and increased

screening facilities to step up production of smaller sizes. Several are adding portable equipment to meet competitive situations. Cost reduction and quality considerations will be the reasons for many installations. The installation of surge piles for unprocessed materials, power shovel replacements and the addition of bituminous mixing plants were mentioned.

Among handicaps most frequently mentioned were deterioration in the quality of labor, inability to secure good supervisory help and relations with labor unions. Others included were taxes, price-cutting, the influx of excessive numbers of new operations and high freight rates.

The following are representative of comments received:

#### NEW YORK STATE:

"During 1954 our tonnage sales of crushed stone will exceed by approximately 30,000 tons the sales of 1953, due to the Thruway construction in this area. Prices were increased 10¢ per ton over 1953. The year 1955 will not show a similar volume, due to Thruway completion, but highway repair and new work should be fairly active."

"Competition should tighten during 1955. An endeavor to give best possible service should help. During 1954 we operated at capacity. This will decrease in 1955. Our ready-mixed concrete company is constructing a second plant."

#### TENNESSEE:

"Our volume of business was down in 1954 from that of 1953, and I might add that 1953 was considerably below the three previous years. We are told that highway construction and business in general will be better in 1955."

"Our records to date show agricultural limestone as 7 percent of our total tonnage, railway ballast is 16 percent, miscellaneous stone, which includes highway, industrial and residential stone, is 60 percent, and chemical stone is 17 percent. As to a change in market, we anticipate a possibly larger output for chemical use, and possibly less for railway use. There will probably be an increase in the materials furnished for highway construction."

"We find that competition has definitely tightened and prices are entirely too low for the good of the crushed stone industry. Of course, we are doing as other companies, adding extra equipment to cut down manpower and other costs. Our percentage of sales in relation to our maximum productive capacity is approximately 63 percent."

"We are definitely exploring every new market possible for the sale of

our chemical stone. However, for normal uses such as highways, etc., there is nothing much we can do in promotion of new business. As to any new products, we are trying to make every possible size of crushed stone, so as to fill the needs of any customer.

"As to plant expansion, we have done quite a bit this year at one of our plants, and will do more in 1955.

"As to the principal handicaps to doing business today, in Tennessee it is primarily the fact that there are too many crushed stone plants. Since we started our business in 1946, there have been at least five new plants built within our shipping radius, thus cutting down our territory considerably. This same situation is true with a number of producers throughout Tennessee.

"The main hope I see for the industry is a very large increase in highway construction, and if the proposal of our President is carried out, no doubt we in the industry will see a considerable increase in our business and at the same time be getting very necessary highways."

#### MICHIGAN:

"Our volume of business in 1954 was about 10 percent below that of 1953. The outlook for 1955 is good and should equal 1953 business. Although our fluxing stone shipments dropped due to the lowered capacity of the steel mills, the demand for our concrete aggregates increased enough to offset this condition.

"Competition has tightened, and we find that our customers are more demanding as to quality and sizing of our materials. The percentage of our sales is about 90 percent of our productive capacity. We do not plan any plant rehabilitation or expansion in the future. All in all, 1954 was a good year sales-wise, and we expect 1955 to be better."

#### IOWA:

"Volume and prices on stone and aggregate were down about 10 percent. Competition is keener due to roadside competition and cutting of specification standards. Percentage of sales is approximately 60 percent of capacity."

#### KANSAS:

"Our volume of business in 1954 was about 82 percent of our 1953 volume. Prices were about 10 percent less. The outlook for 1955 is very good insofar as one phase of our business is concerned (\$60 million turnpike) and overall I believe our volume will probably approach our 1953 or even our 1952 volume which was the best we have had since the inception of our business in 1945.



**Lake Lynn, Penn., plant of Fry Coal & Stone Corp.** This company, one of the major producers in Pennsylvania, has been a very aggressive promoter of agricultural limestone

"The approximate distribution of sales was 22 percent agricultural (this represents a drop of 40 percent since last year in this particular field), 65 percent highways (our highway business includes a rock excavation division for highway construction), 10 percent commercial and 3 percent residential. The significant change is that our agricultural business has dropped about 13 percent.

"Competition has definitely tightened in every phase of our business. We are attempting to step up our personal solicitation, but the main effort towards sales resistance is the reduction of profits and lowering of bids for competitive work. In serving a large agricultural territory, we have had a number of small plants springing up over our area. These are operated by the owner who, by figuring a small wage for himself and very little for any other expense, has cut the prices to such a small margin that a serious threat to the industry has been created.

"These small producers belong to no organizations, subscribe to no publications and spend nothing for the advancement of the industry as a whole. Therefore their operating costs are very small and the competition presented in price is almost insurmountable by an organization such as ours. We have organized a unit composed of the smallest amount of crushing equipment possible and move it from place to place in an effort to offer competition on the spot to these smaller producers.

"We have employed an agronomist in an effort to blend our rock phosphate, which we job and spread with our aggregate, with other fertilizers such as ammonium sulfate, borax, etc., in an effort to give the farmer a product tailored to his soil. We find that the raw rock phosphate is very compatible

to agricultural limestone, both in method of application and in response to our crop needs.

"Due to increased and excessive freight rates, particularly as it affects agricultural limestone, we have been forced to convert all of our equipment to portable carriers. This permits us to break up various units into small, flying squadrons easily transported and economical in operation to compete with these smaller producers. This, of course, comes under the heading of plant rehabilitation. There is also a large turnpike program coming up in our state which may necessitate the purchase of new portable equipment. We are also stepping up and adding to our contract section for rock excavation and highway work.

"Excessive freight rates, a state highway department preference for sand and gravel over crushed stone brought about by the fact that there have been no changes in the high echelons for over 20 years are handicaps. This is also instituted by a one-party government, which is bad in any state. The prolonged drought has been a tremendous handicap from an agricultural standpoint.

"I believe the lack of understanding by local ASC and other authorities in government, a restricted outlook toward long-range construction problems, too much farmer control and a national agricultural policy detrimental to the welfare of the middle west are the greatest detriments toward a sound agricultural limestone policy."

#### PENNSYLVANIA:

"Volume of business in 1954 was lower than 1953 as were the prices. Our production is divided fairly evenly between highways and commercial with only a small percentage going into residential building and a some-

what greater amount for industrial. As to agricultural, we buy material from an outside source for this product.

"Competition is a great deal keener due to new production resulting in lower sales. We, of course, have gone out more after business as a result of this additional production and competition. Ratio of sales to capacity is approximately 60 percent.

"We are trying to develop new markets and have had a certain amount of success. We are also contemplating new products. We are planning some expansion in our bituminous concrete production."

#### OHIO:

"Volume in 1954 was almost identical with that of 1953. Prices in 1954 were about 2 percent higher. For 1955, we anticipate an approximate 10 percent reduction in volume, with no change in price.

"Sales were divided into agricultural 8 percent, highways 20 percent, commercial, industrial and residential building 22 percent, metallurgical and chemical 50 percent.

"Reduced demand has not yet resulted in a tightening of competition. Percentage of sales represented approximately our maximum normal production. Some overtime was required to serve seasonal demands. No new markets or uses are being developed or in prospect. We have no extensive plans for plant rehabilitation or expansion. Our rehabilitation program is practically complete.

"Union seniority rules and bumping practices are quite annoying. Chief hazard to business today, however, lies in zoning restrictions and regulations and to the encroachment of new residential subdivisions limiting the life expectancy of all natural resource industry in this state."

#### IOWA:

"Our 1954 volume was about the same as 1953. Average prices were slightly less than 1953 prices due to a more accelerated competitive condition. We expect 1955 to present tougher competitive conditions than 1954.

"Competition has tightened and narrowed profits. We are attempting to meet this highly competitive condition with increased efficiency and lower prices. Ratio of sales to capacity was approximately 75 percent.

"For plant rehabilitation, we are making normal replacements to maintain maximum efficiency and we are planning no expansion. Present handicaps to doing business are taxes and highly competitive conditions."

#### OHIO:

"Volume in 1954 to date is 94 percent of 1953 volume. Crushed stone

prices in 1954 were slightly below 1953. I would expect 1955 volume to increase somewhat. Perhaps equal to 1953. No significant price changes are expected in 1955.

"Competition has tightened mainly in respect to crushed stone for highway construction. We have had to meet price competition in this field. Otherwise we attempt to hold product quality and give good service. Percentage of sales in relation to maximum productive capacity is about 75 percent.

"We expect to add secondary crushing capacity and more screening facilities for fine sizes."

#### KENTUCKY ASSOCIATION:

"The overall volume of business in Kentucky should be substantially greater in 1954 than in 1953 as normal road construction awards are about 10 percent greater than last year. In addition, there has been let to contract approximately 25 million dollars on the toll road between Louisville and Elizabethtown. The aggregate requirements for this in 1954 only involved structures but the paving requirements in 1955 will involve considerable tonnage for the 40 miles of divided-lane highway."

#### Lime

A limited number of returns from lime producers indicates that volume of sales declined somewhat in 1954, which is explainable in part by reductions in steel production and agricultural applications. There were, nevertheless, a few producers who reported increased volume of business. Prices apparently were unchanged compared with the previous year. The lime industry continues to sell an increasingly large percentage of its output for chemical use, the current figure being about 80 percent. The outlook is for increased tonnage in 1955.

Competition had increased in 1954 with the result that there is more stress on quality and cost reduction, and more direct selling effort. Our sample indicated that production was maintained at a rate of some 70 percent of capacity, and that there is accelerated activity in the development of new markets and uses for lime. There will be considerable plant renovation in 1955, tending to more mechanization for cost and quality control.

Among comments were the following:

#### PENNSYLVANIA LIME PRODUCER:

"Our volume of business for 1954 will be very nearly the same as 1953. We have been able to sustain our volume without any price cut. We anticipate 1955 prices to be carried the same.

"We sell approximately 80 percent of our total production as pebble lime, 15 percent as chemical lime and 5 percent as agricultural lime. We do not anticipate any change in the distribution of this market.

"Competition has definitely tightened and we have attempted to offset its effect by doing a better job and producing a quality product. We estimate that during 1954 we have operated at approximately 92 percent of capacity.

"The only new markets or uses that have been developed for our product are those being developed in the overall industry. We are planning redesigning and renovation of our kilns. This redesign should increase our productive capacity. Our principal handicaps to doing business are those faced by everyone. Stiff competition, a lackadaisical attitude on the part of workers and an extreme emphasis on quality by consumers."

#### PENNSYLVANIA LIME PRODUCER:

"Our agricultural sales in 1954 were about the same as in 1953. Building sales were slightly off and the overall was down.

"Competition has tightened, of course. All that I know to do in the lime industry is to work harder and more intelligently to obtain our share of the business. Operations in 1954 were about 70 percent of capacity. We have no plans for expansion, but continuing modernization of methods and equipment."

#### WESTERN LIME MANUFACTURER:

"Prices throughout our trade area are set by the large lime companies in the midwest and south all of which enjoy low freight rates into the area. Our rates are 3½ to 7 times as high per ton mile within the state. Competitors' delivered prices have not been increased for over three years preventing us from passing on cost increases. These have been met through expanding sales and distribution, but the squeeze is getting worse.

"Within the past two years there have been two freight rate increases totaling over 17 percent on intrastate traffic. Competitors had no increases to markets in our state, and one had a 20 percent decrease. A part of the increase has been in litigation and the roads have temporarily been restrained from collecting it.

"A 45 percent increase in the cost of our natural gas fuel was imposed in September, 1953, the full impact of which was felt in 1954. This increase too is in litigation and has ended up in the State Supreme Court. Both freight and fuel cost increases were approved by the State Railroad and Public Service Commission who we



Two 8- x 125-ft. rotary kilns are operated by Georgia Lightweight Aggregate Co., Rockmart, Ga. This is one of several new plants constructed by this rapidly expanding industry

feel ignored the results on consumers and small business in its decisions.

"Labor costs have risen faster and continue to rise at a greater percentage rate than at competing plants. Our men are represented by International Union of Mine, Mill and Smelter Workers whose organization is geared to battling with the large mining companies. Negotiations with the union tend to be a little one-sided. Whether a small company can survive against the increasing odds is still a question that I hope to answer in the affirmative.

"The market which, because of our superior product and location, should be dominated by this company is potentially great; but because of conditions which were inherited, the market is still dominated by companies two thousand miles away. Our present output is about one-third of installed capacity; but the plant needs modernization and expansion of the portions now too small for efficient operation. Such investment in new equipment is contingent upon changes in the economic climate outlined above.

"Within the past four months better rates into Washington have been approved by the railroads; but the rates closer to the plant still stand. A favorable Supreme Court decision is hoped for on the gas increase. There is hope for a much better 1955 than 1954."

#### PENNSYLVANIA LIME PRODUCER:

"The volume of business in 1954 dropped about 17 percent in our lime business. Although basic prices remained the same, there were a number of evidences that freight absorptions were necessary. Our outlook for

1955 might possibly be estimated at 10 percent under the 1953 figure.

"There is no evidence of changes in the distribution of markets for our goods, 90 percent of which go to industrial plants. Competition definitely has tightened, as three kilns have been added in our district within the last 1½ years. We are making every effort to constantly improve our quality and step up our sales efforts in order to meet this competition. Sales in 1954 were approximately 20 percent below our maximum productive capacity.

"No new markets have been developed for our products. However, there is a greater demand evident for lime in the treatment of sewage and industrial plant wastes. We have no new products.

"We have no plans for expansion. However, we continue to make substantial improvements in our present plants and equipment. Our principal handicap now is the highly competitive lime market at this time."

#### AN EASTERN LIME MANUFACTURER:

"Sales were less in 1954 than 1953. There were no price advances, even in the face of increased manufacturing costs. With regard to 1955, in agriculture we are very hopeful for rather a substantial increase in tonnage, due to the elimination of ridiculous and unnecessary administrative restrictions which were placed on the ASC program. The outlook for building construction is for an increased amount of building, and a very satisfactory tonnage, unless again we are blocked by the present marketing methods of the cement companies. In the industrial field our own prospects

are for an approximate increase of 5 to 10 percent. Dollar sales approximate 45 percent agricultural, 35 percent building and 20 percent industrial.

"We operated at a rate of 80 percent of capacity in 1954. A very considerable number of new markets are being developed for our products. We have laid a very heavy emphasis on this year, with the expectation of a substantially increased amount of sales. We are also broadening our base by the manufacture of a considerable number of new products, which looks very hopeful.

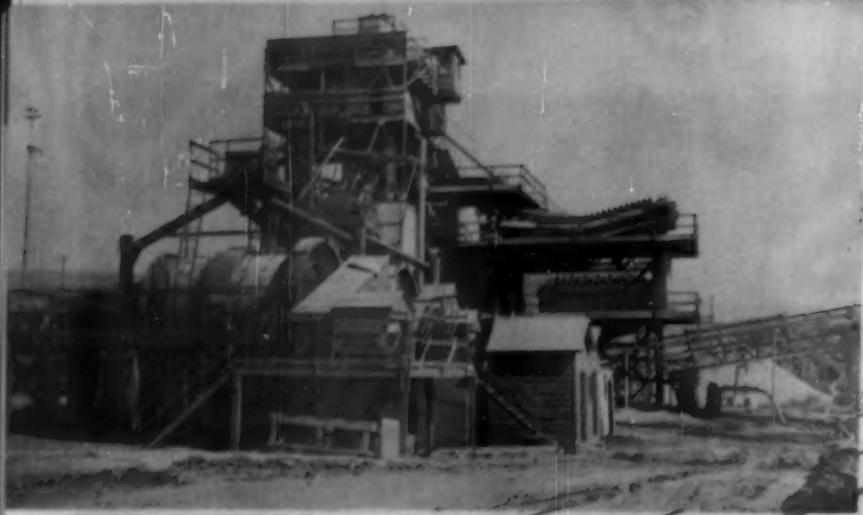
"We are spending approximately \$150,000 on a new mixing plant and storage facilities aimed largely at the do-it-yourself field. We are also increasing our selling organization by about 10 percent."

#### Slag

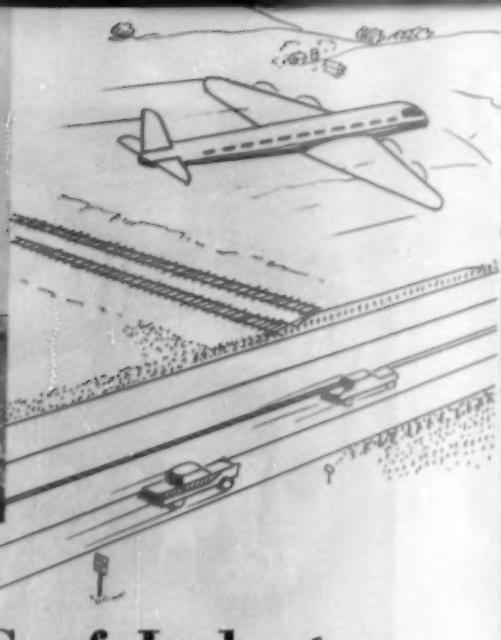
Slag producers operated at a high level of capacity in 1954 limited, generally speaking, only by the availability of slag from the blast furnaces. With blast furnace output now on the rise, the outlook for increased output in 1955 is considered excellent. Should the trend in steel production continue up, the slag industry will approach and could equal its peak production of 30 million tons attained in 1953. Competition here too is becoming much more keen.

Several slag producers have indicated they are considering the production of lightweight slag for concrete aggregate. The industry overall is research-minded and efforts to exploit open hearth furnace slag were covered in

(Continued on page 196)



Two red mills, in foreground, for production of sand at new Oregon plant



## TECHNICAL ADVANCES of Industry

By WALTER B. LENHART

FOR THE YEAR 1954, business in the rock products industries was relatively good. This observation is based on travels from the New England states, through the Deep South, the Midwest, including another dash up the Missouri river drainage basin, the Rocky Mountain states and the West Coast. There was no orderly pattern to the travels. The main goal being to be where something new was going on that might be of interest to our readers. With this in mind, a few days were spent on the Mesabi iron range. A considerable number of dams were visited, notably Hungry Horse to observe, first hand, what was happening to the concrete. In all some 20,000 auto miles were driven; train and air routes accounted for several thousand more miles of travel.

- Aggregates plants emphasizing more processing equipment for quality improvement and additional sizes to meet exacting specifications

Many new plants were built, especially in the crushed stone and sand and gravel industries. Developments in the portland cement industry are not a part of this review as they are dealt with in another section.

In the Miami, Fla., area four new crushed limestone plants were visited. Even with the new productive capacity there appeared to be plenty of business for all producers.

One of these operations involved barge transportation. However, in this case the barge was loaded and then towed to a point near the plant. Valves in the pontoons forming the barge would then be opened and water allowed to enter one side of the barge causing it to tip over completely, dumping its load back into the pool. The bottom of the barge then became

the deck for the next load. This operation was described in *ROCK PRODUCTS*, June, 1954, page 104.

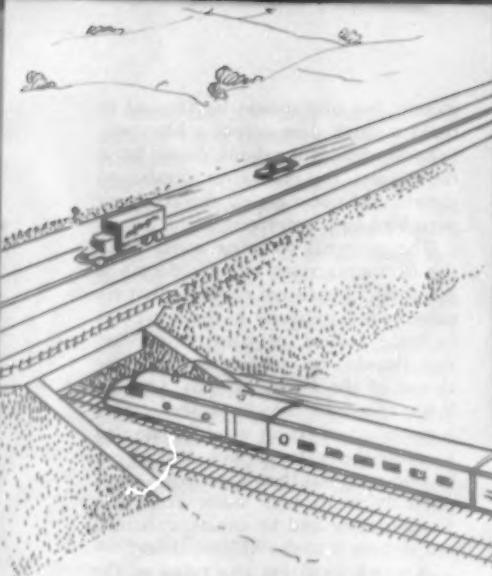
In the phosphate fields south of Lakeland, Fla., plants were aiming for high production goals for the year. One new washing and beneficiation plant for treating phosphate matrix broke ground with the intent of having this new plant running by the end of the year. One older company installed one of the world's most modern raw material stockpiling systems. The same company installed a new and modern dryer that has few equals for advanced ideas incorporated in the new plant. Both of these installations were described in the June, 1954, issue, pages 78 and 82, respectively. Still farther north in Florida, ground was broken for a plant to recover titanium minerals from ancient beach sands that are now miles inland from the east coast of Florida.

### Depletion Problem

In the aggregate processing fields, practically without exception, the new plants were built due to the depletion of deposits formerly worked. The older plants, serving the depleted deposits, were too far distant from the newer sources of raw material to make continued operation practicable. It was not a case of moving an old plant to a new site, but to build, in most cases, an entirely new plant. The need for a new plant stemmed, in many cases,



Self-unloading barge of Ideal Crushed Stone Co., Miami, Fla., showing bottom of deck emerging from below water after dumping load of stone from quarry. Barge is then towed back for another load on deck which had previously been submerged



**McNary Dam** on the Columbia river in Oregon. Photograph was taken a few days before President Eisenhower dedicated the dam.

## Revealed In a Year of Travel

from the necessity of working deposits that formerly would be considered unsatisfactory for processing with equipment then available. The newer deposits contained materials which would have made such aggregates produced from these areas unacceptable. Soft stone inclusions, coal, shales and slates, iron-manganese inclusions (that cause staining of the concrete) excessive clay — these are a few of the deleterious materials that the new plant owners had to remove; the old plants were entirely inadequate.

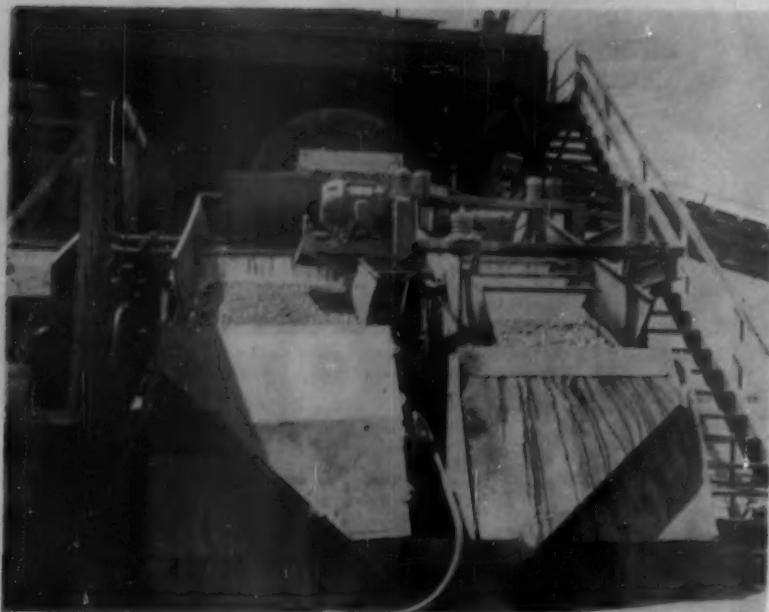
Due to depletion of older deposits, one old and well established company started a new plant at a new site. As no other material was available, a clay-sand-gravel mixture was used that was so high in clay that one wondered if there was any gravel, or even concrete sand, in it. Up to 800 t.p.h. of raw material was processed into the plant with a high percentage of this total discarded as clay balls, or in the wash waters. Another large and well established operator had to build a plant to remove a soft sandstone from the gravel. Percentage-wise, the amount of this stone was on the border line with regard to specifications, but nevertheless the soft stone had to come out because it disintegrated in the pile and gave all the material an undesired appearance. Even in the Missouri river basin where one might think there was plenty of raw material from which suitable aggregates could be made, depletion of an older deposit near Bismarck, N. D., compelled the plant owners to strip up to 58 ft. of overburden to get suitable gravels below. This unusual operation was described in the November, 1954, issue, page 66. Similarly, because sand and

gravel, or crushed stone is not as common a commodity as most people think, for the Oahe dam, now well into its construction stages on the Missouri river, near Pierre, S. D., the sand is coming from a new plant a hundred or more miles to the east, and the crushed stone (a limestone) has to be shipped from Rapid City, S. D., several hundred miles to the west. A new crushed stone plant was built at Rapid City for this job but inasmuch as several more dams are contemplated, and the area is growing steadily, the new plant probably will remain as a commercial producer for many years.

The Pick-Sloan plan for the development of the Missouri river basin called for the construction of some six or more dams on the river itself and a hundred or more on the main tributaries serving the Big Muddy. Unless the project is carried through as planned, the whole system is in jeopardy, for without the dams on the tributaries, erosion will continue near its present levels. The Big Muddy will continue to be muddy and when this debris reaches any of the dams so far built it will only be a few decades until the dams could be filled with silt and their usefulness ended. However, by completing the Pick-Sloan plan



**Final sand recovery section** at the Folsom Dam plant. An 8-ft. dewatering unit with liquid cyclone mounted at one end to recover more fines.



**At the Becker County Sand and Gravel Co. plant at Marlboro, S. C., a rotary scrubber screen removes most of the fines and splits the gravel portion into two fractions that are again scrubbed in rotary blade mills. This plant also uses liquid cyclones for fine sand recovery.**

along with other soil conservation work going on in this vast drainage basin, erosion will be stopped at its source and the main dams on the Missouri will be useful for four to five hundred years. Garrison dam on the Missouri is practically completed. Gavin's Point, near Yankton, will be completed in about two years.

Years ago this writer sensed a possible market for rip-rap or jetty stone that could run into the millions of tons annually. At the time we were concerned with what might happen to Hoover (Boulder) dam if enemy agents hauled four torpedoes, similar to those used by submarines, and loosed them consecutively on the concrete mass of Hoover dam. The idea was discussed with some informative people experienced in this line of battle and the answer was bad news. The idea we had at the time was to dump, say 15,000,000 tons of jetty stone, with pieces in the 3 to 12 ton range a few hundred feet up-stream from the face of the dam. This natural mountain or rock would absorb all the punishment. With large stone the interstitial area would be more than sufficient to permit all the water needed for power to pass through the porous mountain. The idea was abandoned as being a little on the visionary side. But this year, according to newspaper accounts, the Bureau of Reclamation was thinking in similar terms for Grand Coolie dam. Their idea had a little switch to it, however. They visioned an atomic bomb destroying Grand Coolie dam, and in such an

event, Portland, Ore., would be in jeopardy. Estimates were given that in the event of the collapse of Grand Coolie dam, water would flow into the fourth story of the Multnomah Hotel. However, by piling a mountain of jetty stone up-stream from the dam, in the event of the dam's failure, the rate of flow of water would be reduced to such a point that floods experienced would be no greater than some in the past.

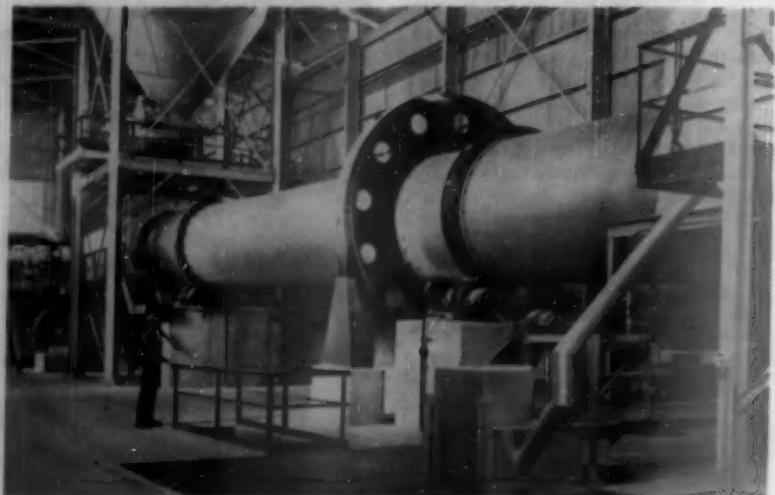
The development of hydroelectric power is an important subject especially to all westerners. No one cares who builds the dams, but they should be as big as sound engineering factors

dictate. No one should be allowed to build a small dam across a big river. Whoever builds the dams should build the biggest that the river conditions dictate and not mess up the economy with bird-bath reservoirs.

The proposal to bring water from the Columbia river into California is not dead. One recent proposal that received some publicity in the West was to build a steel, or concrete conduit that would be constructed on the shores of the Pacific to Los Angeles. With adequate "head" at the intake, a minimum of power would be needed to carry the water to Los Angeles. A second proposal that is receiving some publicity is to take water from the Feather river and by canals, conduits, etc. deliver it to the Mojave desert.

A quick look was also taken of the Palisades dam on the upper Snake river near the Idaho-Wyoming border, and Abilene dam north of Spokane. These dams were in the latter construction stages and relatively small, but will develop some needed power in the areas. St. Josephs dam on the Columbia is in the latter construction stage; McNary dam is finished and was dedicated by President Eisenhower during the summer. The big development on the Columbia is the Dalles dam. This project when completed will cost an estimated \$350,000,000. By comparison up to June 30, 1948, Hoover (Boulder) dam, the cost of the highest concrete dam in the world was a trifle less than \$142,000,000. A unique feature of the Dalles job is that two, modern, large capacity gravel plants were built. Each gravel plant supplies a prime contractor.

Inasmuch as most sand and gravel producers, especially in the West, are also in the ready-mixed concrete business, the subject of better concrete was an important issue to them. Most



**Looking toward oil-fired furnace end of 8- x 80-ft. rotary which dries phosphate rock at rate of 200 t.p.h. at Nichols, Fla., plant of Virginia-Carolina Chemical Corporation.**

of them felt that little headway was actually being made towards basic information by which they could consistently produce better concrete.

The McPhearson road strip built by the Kansas State Highway Department might be used to illustrate this general subject. The scope of this project was described in *ROCK PRODUCTS*, February, 1950, page 126. Several different brands of portland cement and a higher number of different pozzolans were used in a series of concrete pavement slabs. No better service could be given to the concrete industry than for the Kansas Highway Department to release in full their findings.

#### Silica In Concrete

An important development in the concrete block industry has aroused considerable interest. For a decade or more there were a few concrete block manufacturers who cured block in autoclaves, using high steam pressures to accelerate the setting and curing. This group had its own little association to more zealously present the advantages to users. On the other side of the fence was a larger association with thousands of members who did not have autoclaves. Any friction between the two groups was friendly but present. This year, in the search for better concrete, a past president of the larger association adopted autoclaves. A director of the larger association did likewise. The clincher in this advance was, in a measure, due to the fact that when portland cement sets, it liberates free lime. If an active silica is present to react with this liberated lime, additional strengths are possible. In the autoclave, or the high pressure steam vessel used, it was found that 40 percent silica flour could be used to replace an equal amount of portland cement and still the concrete block would have the required strength. Some experts in this field estimated that the saving amounted to about 2 cents per block. This saving, in time, would write off the high investment necessary for an autoclave plant. This century old "discovery" has resulted in a flurry of interest in high pressure steam curing. But the aftermath extends further than that, for one may ask: "If the reaction takes place at high temperatures and pressures in a few hours, perhaps there is a form of silica that will react in a reasonable time in ordinary concrete."

Manufacturers of silica flour have found the concrete block business a desirable sales outlet. Freight rates enter this picture, so in the years ahead, as the autoclave process spreads, new grinding plants will undoubtedly come into being.



New high calcium lime plant in eastern Oregon

A porcelain grinding ball for use in tube or ball mills has been developed by a Denver concern that has a specific gravity of 3.4 which is 38 to 40 percent heavier than flint. It is free from iron. The heavier ball has increased grinding capacities and, because of its toughness, gives greater service. Although first costs are higher, the newer grinding media is finding acceptance in the grinding of white portland cements, talc, garnet, and has a wide field of use in the silica grinding field.

#### Lightweight Aggregates

The manufacture of artificial lightweight aggregates continues to occupy its share of the limelight. New plants have gone into operation and others are contemplating entering this field. Rotary kilns vied with sintering machines as the primary productive units, with each producer, regardless of the type of kiln used, seemingly well satisfied. However, there were exceptions to this statement. With some newcomers in the manufactured lightweight aggregate field all was not rosy. Operating problems developed that jeopardized the whole business. According to reports, one plant had operating trouble mainly due to variations in the raw material. In another the final product was a mixture of raw material and glass beads. In still another, the finished material disintegrated on standing — slaked, like lime. However, this latter venture never got past the pilot plant stage.

In some sections of the country where new lightweight aggregate plants were built, selling the finished product developed into a problem. In any area that is unaccustomed to using artificial lightweight aggregates, promotional

and sales work can be expensive and, if not fully successful, slows down production. It was found in Texas, where a large tonnage of this type of aggregate is produced, that for plants to be really successful, the ready-mixed concrete industry must accept the material wholeheartedly, and to help in the promotional work. Many ready-mixed concrete plants now have separate bins for handling this type of material.

#### Heavy Media Process

The heavy media separation process continues to be a factor especially in the sand and gravel industry. One plant recently went into operation in Michigan. These plants would not be significant in a broader sense, but the operations, according to reports, have been so successful in removing slate, shales, coal, soft stone and other deleterious material that specifications in states where these materials are present may be changed so that heavy media may become almost mandatory. One gypsum company is using the process to remove dolomitic inclusions from the gypsum rock, according to reports.

One of the important cost items in heavy media separation is the cost of the media used. Magnetite and ferrosilicon, or a mixture of the two, are used as media. The magnetite is ground to about 70 percent minus 100 mesh. It is the practice to buy this material already to use. It comes to the plant in bags or barrels and is usually still damp. It has been observed that practically every sand deposit has a little magnetite in it. We have seen some sands where the magnetite in the sand stuck out like a sore thumb. We hope

(Continued on page 128)

# Prospective Chemistry of Cement and Concrete

By NATHAN C. ROCKWOOD

CEMENT CHEMISTS have always been interested in silicon, the second most plentiful element in the Earth's crust, but only as silicon dioxide ( $\text{SiO}_2$ ) or silica. It is assumed that it reacts as such in the formation of both cement clinker and in the final product, hydrated cement. Nearly 28 percent of the Earth's crust is this element silicon, yet a pound of pure silicon is worth today \$380, almost as much as a pound of gold. Only recently has it been available in commercial quantities, but it is finding some very special uses in electronic devices because it has some remarkable properties. It has begun to displace electronic tubes (or valves, as they are called in Great Britain) in such devices as transistors, diodes and rectifiers. On a small scale, at least, it can change the sun's rays into a current of electricity. The principal producer of silicon, E. I. du Pont de Nemours & Co., stated in a recent press release, "It promises undreamed of advances in communication, transportation and industrial processes, and in health, safety and living conditions." Evidently, the time is approaching when we shall be glad that the Creator provided mankind with such a plentiful supply.

As everyone who has studied chemistry or mineralogy knows, the silicon in silica is very firmly bonded to oxygen, and to separate the two is a difficult and expensive process. Free silicon with its affinity for oxygen is therefore one of the best deoxidizing reagents, and it is used as such to remove impurities in steel. It is not probable that in any reaction in the manufacture of portland cement clinker or in the hydration and setting of the cement, we ever deal with the element silicon as such. However, it is conceivable that under reducing conditions in a kiln at very high temperature some silicon might be freed from its oxygen ions. Probably though the silicon always remains firmly bonded either to oxygen in clinker and to the hydroxyl (OH) or to water ( $\text{H}_2\text{O}$ ) in hydrated cement. Yet no cement chemist's education could be considered complete without some knowledge of the element itself, since it is the key to the nature of all its compounds. If the reader hesitates to believe this, we recommend that he read a recent

new textbook "Silicones and Their Uses,"<sup>1</sup> by Rob Roy McGregor, administrative fellow, Mellon Institute. It is a relatively small book and written especially for the understanding of engineers or other non-chemist laymen, primarily that they may see the present uses of silicones, and very likely be able to suggest new ones.

Starting with the history of silicones, which is most interesting, the text continues with descriptions of present-day commercial silicones, and the various uses of each. Probably, most readers have some knowledge of this subject because these commercial silicones from time to time have been described in both newspapers and popular magazines, as well as in technical magazines of all kinds. As fluids they are used for lubricants, damping fluids, water repellents, defoamers, release agents, and other purposes. As compounds they are used for water repellents and for their dielectric (insulating) properties in electrical devices. They are made into lubricants (greases and fluids) which can withstand both very high and very low temperatures, and have long life. They are used as resins for electrical insulation and for laminates, in paint formulas, as release agents and water repellents, and in rubber for special purposes.

Producers and manufacturers in any industry requiring substances with the properties described in great detail in this book would no doubt find many profitable suggestions in that part of the text, for it is written by an enthusiastic believer in silicones for many already established purposes, and for many yet to be discovered. Our rock products industries, particularly lime and cement, have lubrication problems arising from high temperatures; and concrete products manufacturers have use for parting or release liquids or pastes to keep their pallets clean and usable. The principal handicap of silicone preparations up to this time is their relatively high cost as compared with competitive materials. There is, however, a growing use of water repellent silicone preparations in concrete products manufacture, but the field even here has hardly been scratched.

<sup>1</sup>McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y.; price \$6.00.

## Part XI. A bit on the chemistry of the element Silicon

Interesting and helpful as all our readers may find the descriptions of commercial silicones and their uses, our primary interest in this book at the moment is the light it throws on the chemistry of silicon. That is where the cement and concrete researcher comes in. Obviously, as long as the silicon ion is bonded to oxygen ions, as firmly as it is, it can't be used for other and different chemical combinations. Silica can be dissolved, in water very slightly, but much more so in alkali solutions, but so far as anyone has determined there are never any free atoms or ions of silicon in the solution. The silica is hydrated or hydrolyzed by substituting four (OH) radicals for the four (O) ions at the four apexes of the silica tetrahedron  $\text{SiO}_4$ . This gives  $\text{H}_4\text{SiO}_4$ , which is called a silicic "acid" because it is formed from a non-metal and has slightly acid properties, but the formula could be written  $\text{Si}(\text{OH})_4$ , where under certain conditions it might be termed a hydroxide of silicon. In any event we have not separated the Si-O bond; we have merely satisfied the unused negative valences of the silicon-bonded O ions with H ions or atoms from the water or the solution of alkali hydroxide.

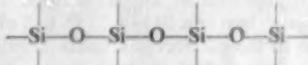
### Chemistry of Silicon

True aqueous solutions of silica in which these separate ions of  $\text{H}_4\text{SiO}_4$  or  $\text{Si}(\text{OH})_4$  occur are always extremely dilute. The lime constituent of cement  $\text{Ca}(\text{OH})_2$  is somewhat more soluble, but still only slightly so. Hence, in the hydration and hardening of portland cement, the theory that the silica and lime first go into true solution and then react with each other has always seemed to us very difficult to believe. Of course, there is a possibility of a continuous "chain reaction," whereby minute particles react and crystallize out, and make way for new reactions; but any such reactions, anywhere near complete, judging by the slowness with which minerals containing silica and lime dissolve, seem inconceivable in the time allowable for a cement to set and harden, and with the amount of water available. It appears much more plausible that some very small amounts of  $\text{SiO}_2$  and  $\text{Ca}(\text{OH})_2$  are dissolved, and

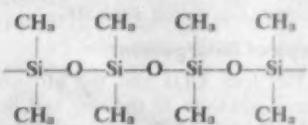
react, but that the bulk of the reactions are between particles of colloid size — in other words, only on the surfaces of aggregations of hydrated  $\text{SiO}_2$  and hydrated  $\text{CaO}$ .

To get back to the subject of silicone chemistry, Chapter 5 of this book is of very special interest to cement chemists and cement researchers. It is written in simple enough language that anyone with an elementary knowledge of chemistry can follow. The chemistry of the silicones bears some resemblance to the chemistry of carbon-organic chemistry — chiefly from the fact that it is possible to join together in large molecular organizations or polymers — molecules in which the silicon atom or ion is the center of a surrounding tetrahedron of elements, or radicals such as some of the hydrocarbons. In this respect silicon resembles carbon, but the chemistry of the compounds formed is quite different. The silicones are formed through bonded groupings into chains and rings as are other silicates, and as in the silicates the bond between the molecular or cellular links is  $\text{Si}-\text{O}-\text{Si}$  in many of the most common silicones — the Sil-ox-anes, in the language of our author. The bonding ion, however, may be carbon  $\text{Si}-\text{C}-\text{Si}$ , the Sil-carb-anes, or nitrogen  $\text{Si}-\text{N}-\text{Si}$ , the Sil-az-ane. When the group contains  $\text{Si}-\text{O}-\text{Si}$  bonds, disiloxanes are formed; with  $\text{Si}-\text{O}-\text{Si}-\text{O}-\text{Si}$ , trisiloxanes, etc. to polysiloxanes, which contain larger groupings.

When we have a polysiloxane, which term includes most of the silicones of commercial importance, we may have a chain or ring

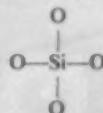


in which each of the end Si has three available valences that can be used to bond other ions to it. The intermediate Si have only two valences not already used. If then we attach or bond to the unused Si valences an organic radical with one free valence like  $\text{CH}_3$ , we have



which is a Di-methyl Silicon fluid. It is insoluble in water and highly water repellent, is used for coating glassware, for polishes, release agent, as an additive to paints, rubber, waxes, etc. In the same way other kinds of ions may be bonded, or tied to the Si; such elements for example, as chlorine, which has an unused electron or ionic bond (that can be effected by transfer of an electron from Si).

The first step in silicon chemistry of course is to free the  $\text{SiO}_4$ , or



of its oxygen ions. This is done by a reducing agent, or by heating sand (quartz)  $\text{SiO}_2$  in the presence of just the right amount of carbon (C):

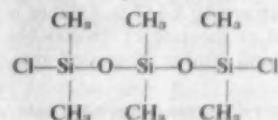


When an excess of carbon is present we get  $\text{SiO}_2 + 3\text{C} = \text{SiC} + 2\text{CO}$ . The SiC is the carborundum of commerce.

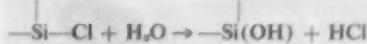
The element silicon is a grayish black solid with a metallic luster, but it is not by chemical definition a metal. It is quite inert at ordinary temperatures, but oxidizes readily at high temperatures to  $\text{SiO}_2$ .

The next step is to get a combination containing chlorine, presumably because this comes out in the form of a gas, which is readily reacted with other molecules or ions which can be bonded to the silicon in place of the chlorine. The modern commercial methods of processing combine the two steps by heating silica with a mixture of carbon in an atmosphere containing chlorine gas. The product is condensed to a liquid at a temperature below 57.6°C. When water is added (or moisture from the atmosphere) to the silicon tetrachloride it changes to  $\text{SiO}_2$ , and hydrochloric acid (HCl) according to the equation  $\text{SiCl}_4 + 2\text{H}_2\text{O} = \text{SiO}_2 + 4\text{HCl}$ .

The Cl ions are also readily replaced by ions of the organic radicals, and in this way many kinds of silicones are made. One interesting point for cement chemists is that even if only one Cl ion is left in the group, that is for example we have



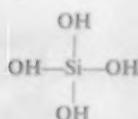
Water will immediately react with the Cl thus:



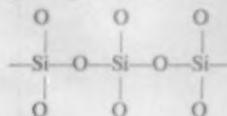
But the  $\text{Si(OH)}$  does not last. Ordinarily it joins up with other end-free  $\text{Si(OH)}$  groups as shown below:



That is the way in which chains, rings or other aggregations of molecules containing the organic radicals — the silicones — are joined together; in chemical language they are polymerized. It would seem that this must be in the same way that any free

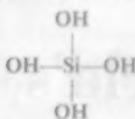


ions in "silicic acid" or in an hydrated cement join up to form

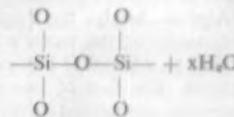


rings or chains as the case may be. The rings or chains thus formed in hydrated cement could hardly contain all of the silica as ions, since apparently such a relatively small amount of the whole ever gets into a true solution; but these chains or rings could surround, entangle, and thus bond particles of much larger size — hydrated colloidal particles of both  $\text{SiO}_2$  and  $\text{CaO}$ .

The conclusion would seem to be that if in hydrated cement we do have



ions, the ultimate reaction would rather speedily convert these to chains or rings or three-dimensional aggregates of



which means particles of silica with adsorbed water, or possibly chemically bound water. Whatever Ca, K, Na, Al, Fe or other elements or ions may be in the structure of hydrated and hardened cement must certainly be bonded to the Si only through the O ions, but none would have as firm a bond to the O ions as the silicon has.

Now that practically pure silicon, calcium, aluminum and iron can be readily obtained, and these can be readily oxidized and hydrated or hydrolyzed in the presence of heat and moisture, it would seem that some interesting research might be worked out to see what compounds really are formed when these pure hydrated oxides or hydroxides are brought together at room temperature under con-

ditions simulating the hydration of cement.

CARLSEN CONCRETE CO., Indianapolis, Ind., recently added a fleet of eight transit mixer trucks to its ready-mixed concrete facilities.



Looking toward clinker storage area showing transport belt conveyors with shuttle conveyor gallery for stockpiling in background

## World's LARGEST CEMENT PLANT

A SERIES OF MAJOR EXPANSION PROGRAMS of Huron Portland Cement Co. at Alpena, Mich., has raised the annual capacity of the world's largest cement mill to 9,000,000 bbl. of portland cement. The first of two expansion programs, completed in the 1946-1950 period, had established the plant as the largest single production unit in the industry. Its annual rated capacity was then 7,000,000 bbl.

The latest enlargement, completed in 1953-1954, was in excess of 25 percent which, for a plant of this size, amounts to an increase just about equal to the capacity of the average

American cement plant. Capacity at Alpena is now approximately equal to that of five average cement plants. Total increase since V-J Day has been an estimated 150 percent, or the equivalent of adding three average size cement mills to the nation's capacity.

The new plant now employs 1000 people, has a peak power load of 650,000 kw. h. per day and burns approximately 435,000 tons of bituminous coal per year in 24 rotary kilns.

There are eight 8- x 110-ft. kilns and 16 are 10 x 153 ft. Clinker is produced at the rate of 26,000 bbl. per day, and clinker is ground into type

I or IA cement at a peak rate of 36,000 bbl. per day.

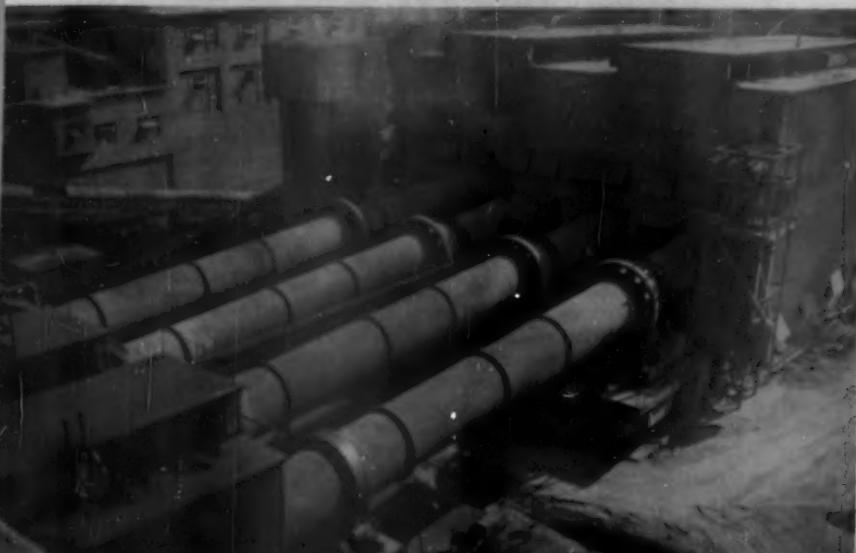
Storage capacity for finished cement is 800,000 bbl. and one of the major items of the recent program has provided for the storage of 2,000,000 bbl. of clinker available for grinding. Raw grinding is done through nine 7- x 26-ft. tube mills closed circuited with mechanical air separators, and through two new 9½ - x 15-ft. ball mills also in closed circuit. Clinker grinding is accomplished in two stages, with nine Bradley mills for preliminary open-circuit grinding and with twelve 7- x 24-ft. Compeb mills and two new 8- x 37-ft. Compeb mills in closed circuit for finish grinding. Three of the Bradley mills and the two larger finish mills are recent additions which have combined to add 10,000 bbl. per day to clinker grinding capacity.

### Scope of Enlargement

The four kilns and the aforementioned additions to the raw and finish mills comprise the principal production units added in the latest building program, but these additions have necessitated a rather involved overall construction program requiring other necessary increases to auxiliary operations, re-arrangements in plant layout as required because of space limitations and almost a complete overhauling of material handling facilities.

The 1953-1954 enlargement program has involved practically all de-

Four new 10 ft. by 153 ft. 6 in. rotary kilns. They are dry process, equipped with waste heat boilers, and have electrical precipitators for stack dust collection





**Close-up of shuttle conveyor gallery over reclaiming tunnel. Storage capacity is 2,000,000 tons of clinker**

## Boosts Capacity Again

parts of the plant to step up their capacities and efficiencies, and with an eye toward future further enlargement. The Bradley mill building had to be extended, a new building was constructed to house the new finish mills, a completely new scale and proportioning plant building was built to replace inadequate clinker proportioning facilities and entirely new raw materials proportioning facilities were installed.

Shale crushing capacity at the cement plant was not up to requirements so an entirely new shale crushing and screening plant was built at the shale quarry, of sufficient capacity to meet any future anticipated requirements. Clinker storage was inadequate in the two existing clinker storage areas (Nos. 1 and 2) so an entirely new system was built involving stockpiling by belt conveyors into open storage and reclamation by tunnel belt conveyor to the new scale and proportioning building. This was a major improvement in material handling whereby the economies and capacities of belt conveyors have displaced the use of overhead cranes and bulldozers as used in the old storage areas. The new kilns have been installed with their hoods opposite those of four other kilns in a double-row arrangement whereby space is now available for putting in eight more kilns in the future.

Other additions comprised a new gypsum handling system, the instal-

lation of numerous dust collectors throughout the plant, addition of a new 12,500 kw. turbo-generator, redesign of the entire circulating and mill water source of supply, and improvements to the electrical distribution system.

It was at this plant that the Airslide and Airfeeder were developed and perfected, and many applications of these devices have been made throughout the plant. The company had turned over the rights to manufacture and sell these feeders and conveyors to the Fuller Co. and they are being marketed under the trade names of F-H Airslides and F-H Airfeeders. However, the company reserved the right to manufacture these units for

**New shale crushing plant.** Sized shale is stockpiled and reclaimed by tunnel belt conveyor for loading cars in background



- Clinker storage and belt conveyor handling system, electrical dust control in clinker grinding department among distinctive features. Plant now has 24 kilns with waste heat boilers. Additional kilns and improvements planned for twelve million barrel annual cement capacity

By BROR NORDBERG

its own use. It has a fabricating plant for the purpose and makes all manner of use of them. An article in Rock PRODUCTS, August, 1949, "Air-Activated Gravity Conveyors" describes their operation and use.

### Special Features of the Plant

There are a number of operations in connection with the newer facilities which are of special interest. The use of electrical precipitators in the Bradley mill building to vent the mill flues, conveyors and elevators is the first successful installation of the Cottrell precipitator to finish mill operation. Two newly developed dust collectors, of the bag-type and cyclone type, are used in the new scale and proportioning building. Proportioning equipment, whereby single large capacity scale units serve a battery of grinding mills, is used in both the raw mill and clinker grinding department.

The clinker storage and handling system is the only one of its kind in



Overall view of shale quarry, showing steam shovel and rubber-tired haulage units

the cement industry. Clinker is placed into open storage in one large pile via belt conveyors and an overhead shuttle conveyor. It is withdrawn by a tunnel conveyor to be returned into the plant for proportioning and grinding. Some two miles of conveyor belting are involved for material handling and the design provides for storage of 2,000,000 bbl. of clinker. With the use of bulldozers, an added million barrels could be stockpiled and re-handled.

The shale crushing plant is one of the first in the industry to install the Cedarapids double impact breaker. Features of the shale quarry are a rotary drill and large rubber-tired earth-moving equipment for haulage. The four new kilns have only their firing ends and waste-heat ends enclosed in buildings, leaving most of

their lengths exposed to the weather. This is new practice for Huron and out-of-the ordinary for a plant located so far north. Another innovation is that the new kilns are fired with pulverized coal by the old-type bin system rather than by unit grinding mills.

The foregoing gives a general idea of the scope and special features of the 1953-1954 construction program. The older installations have been involved throughout and the selection of equipment has been limited in some cases because of available space, in a program that is a tribute to the technical knowledge and skill of Huron engineering and production personnel. It was an extremely difficult job to accomplish with absolute minimum interruption to production, while making maximum use of existing equip-

ment within restricted space and still providing for future expansion.

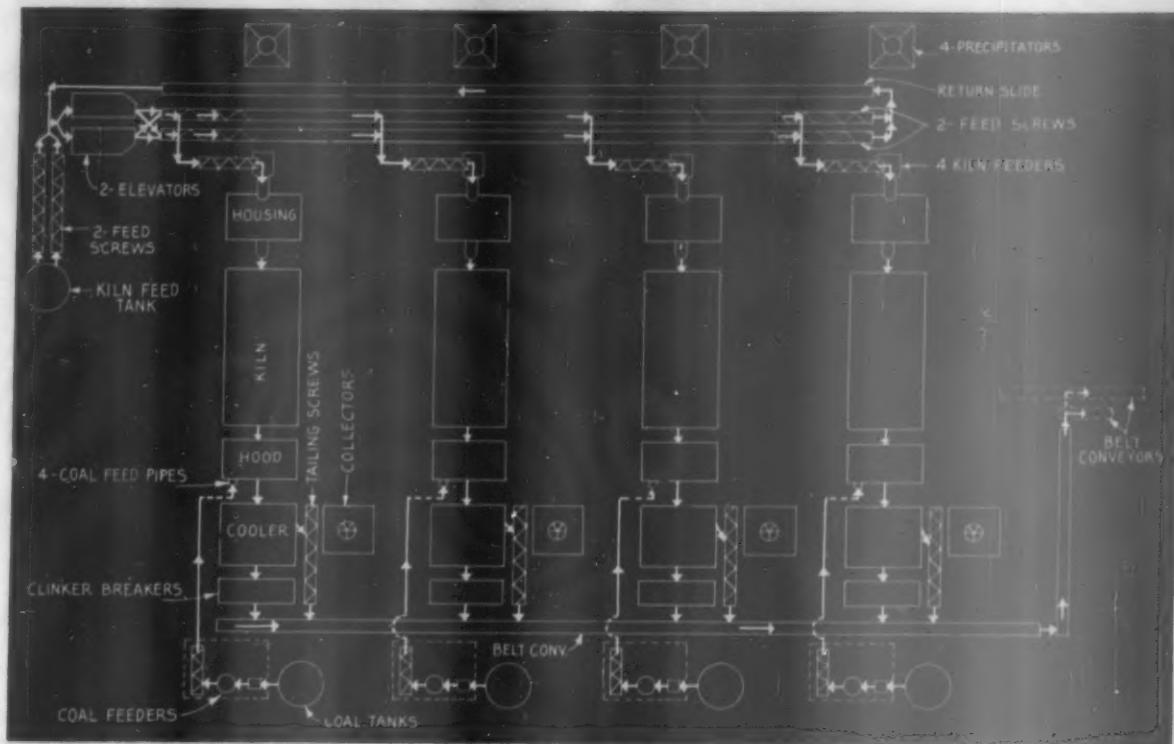
#### A Water Shipping Plant

Adequate description of the newer installations necessitates a brief discussion of the conditions which distinguish the Alpena plant from others in the cement industry and also requires brief mention of some of the older facilities because of their relation with the new.

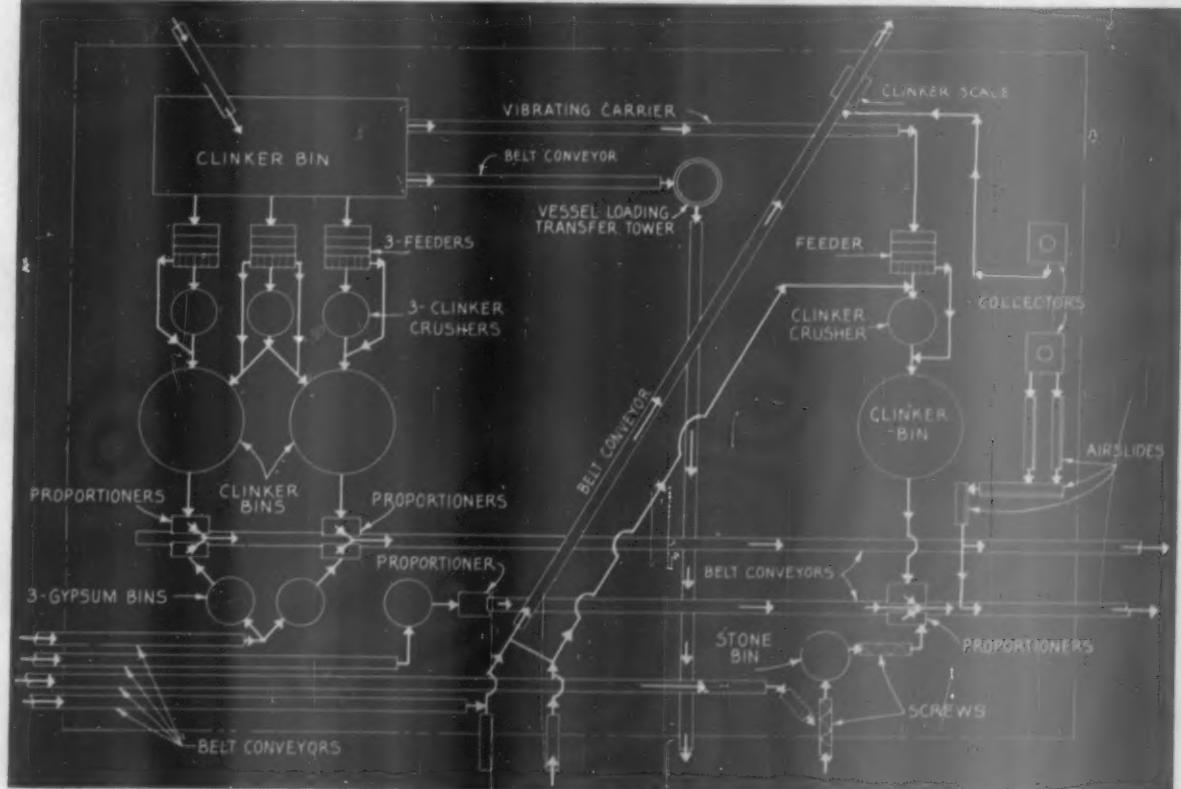
Alpena is almost entirely a water-shipping plant and has an enormous shipping area for a single manufacturing plant. Cement is at times shipped into New York State and New England to the East and, westward, as far as the Rocky Mountain area, and from the U. S. border on the north to as far south as freight rates permit



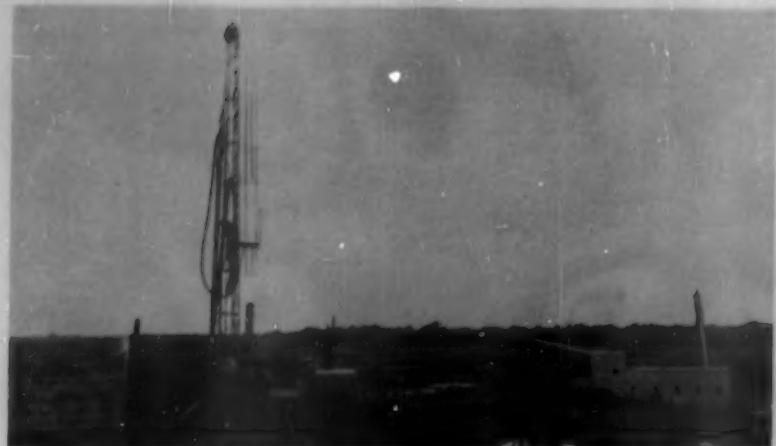
Arrangement of belt conveyors for handling of limestone, gypsum and clinker in connection with storage and proportioning for grinding. Shuttle belt conveyor for storage; reclaiming belt conveyors are seen above



Four new kilns are fired with coal by bin system, and each is fed by circulating screw conveyor system. Separate waste-heat boilers and electrical precipitators are operated in conjunction with each kiln



Arrangement in new scale building for proportioning for feed to the preliminary finish grinding mills



Close-up of rotary drill on top of shale quarry. New crushing plant is in background

from its lower Great Lakes distributing plants.

Approximately 95 percent of total production is moved in bulk cargo ships to Great Lakes ports where Huron has packing and distributing plants with large storage capacities for finished cement. The remaining 5 percent is shipped from Alpena by rail and in large capacity trucks. All packing in bags is done at the auxiliary plants.

Auxiliary plants are located at Detroit, Mich.; Cleveland, Ohio; Duluth, Minn.; Milwaukee, Wis.; Buffalo, N.Y.; Toledo, Ohio; Saginaw, Mich.; Oswego, N.Y.; Muskegon, Mich.; Green Bay, Wis.; and Superior, Wis. Clinker is also shipped from Alpena in cargo ships to be ground into cement at Superior, Wis. Cement is delivered to the distributing plants in four cargo ships operated by Huron Transporta-

tion Co. which is a subsidiary of Huron Portland Cement Co.

The S.S.T. Crapo, M/V Paul H. Townsend, S. S. John W. Boardman and S. S. Samuel Mitchell have capacities of 45,000, 33,000, 32,000 and 18,000 bbl. of cement, respectively. They discharge cement from their holds into the storage silos at the distributing plants by F-K pump systems, and by screw conveyors and bucket elevators.

The normal navigation season is from April through November which requires that the Alpena mill have the ability to produce clinker throughout the year and build up enormous storages during the winter months when demand is down and the shipping season closed. It must have abnormally high clinker grinding capacity and adequate shipping capacity during the summer months when demand is high.

The Alpena plant is a dry process, waste heat operation and is self-sufficient in electrical power. Prior to completion of the 1953-1954 program, six 10- x 153-ft. rotary kilns had been added since V-J Day, raising the total to 20. The six kilns had increased clinker capacity of the plant by 75 percent but an additional 15 percent increase had been accomplished through improved efficiency of existing operations. The newer kilns were equipped similar to the older kilns, with 1000-hp. Wickes waste heat boilers, Green economizers and Cottrell electrical precipitators.

The required increase in raw mill output was accomplished through experimental work which had been done on the raw mills over a 5-year period. Resulting changes were effective in raising output of each mill from 19 t.p.h. to 30 t.p.h. in grinding to a fineness of 91 percent through the 200-mesh sieve. There were nine 7- x 26-ft. Compeb mills, each in closed circuit with a 14-ft. mechanical air separator.

Grids at the separating heads in the mills were replaced by plain division heads so that the mills could be operated as modified tube mills and with higher circulating loads. The circulating loads were increased from 50 percent to 200 percent. Other changes contributing to increased output included the installation of a vibrating screen to scalp out plus  $\frac{1}{2}$ -in. material ahead of the hammermills which precede the milling, stepped up mill speeds and installation of Hardinge Feedometers for improved uniformity of feed. Thus, maximum capacity had been achieved and it proved to be just sufficient for 20-kiln operation.

Before World War II, clinker was ground through twelve 7- x 24-ft. Compeb mills. Eight of these mills were used for preliminary grinding, each in closed circuit with a mechanical air separator, and finish grinding was in open circuit through four mills.

To meet the increased requirements when six kilns were added prior to 1953, the clinker crushers were opened up from  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in., six Bradley mills were installed for preliminary grinding and the 12 Compeb mills were arranged for closed circuit grinding with high circulating loads. The preliminary mills then installed had an output of 200 t.p.h. each at a surface area of 700 sq. cm./gm., and output of finished cement was increased from 16,000 to 26,000 bbl. per day. An additional production of 2500 bbl. per day was attained by building the clinker plant at Superior, Wis. New distributing plants were built at Green Bay, Wis., and Superior, Wis., as part of that program.

Clinker storage capacity at Alpena



One of three rubber-tired haulage units which deliver 20 to 22 tons of shale to crusher



This 50-in. wide apron feed conveyor receives quarry-run shale and delivers over a scalping screen ahead of crusher



Double Impeller, Impact breaker with dual drive reduces shale up to 50-in. size to minus 3 in. at rate of 500 t.p.h.

became inadequate as a result of the step-up in production. The problem was met by removing the walls of the main clinker storage areas for extension of clinker storage into the surrounding area. This required the use of bulldozers to augment the existing overhead cranes in handling the clinker into storage and for reclaiming by belt conveyor. A high capacity belt reclaiming system for the transport of clinker to the dock alongside the main stockhouse was built, for loading cargo ships via an extendable shuttle belt conveyor.

The foregoing covers postwar accomplishments prior to the 1953-1954 enlargement program which is the main subject of this article. An article, "Huron's Expansion Program to Increase Cement Production," published in the January, 1951, issue of *ROCK PRODUCTS* discusses the earlier capacity increases in detail.

#### Raw Materials

Limestone and shale comprise the raw materials for cement manufacture, in the ratio of about 80 percent limestone and 20 percent shale. Limestone is produced from the quarry adjacent to the mill. Stone of 3-in. top size is delivered to the cement plant by overhead belt conveyor, transferring by a shuttle belt into feed bins serving rotary dryers. The limestone is approximately 92 percent  $\text{CaCO}_3$ , and is low in silica.

Shale is the source of alumina and iron, and is obtained from Huron's quarry ten miles east of Alpena. Until

1953, pit-run shale was excavated by power shovel and loaded into hopper-bottom railroad cars for direct delivery to the cement mill. Here, it was crushed through a 2460 Fairmont roll crusher preliminary to drying. This crusher had been in service since 1924 and no longer had sufficient capacity.

The decision was made to build a completely new crushing and screening plant at the shale quarry, and to substitute rubber-tired haulage equipment for railroad transportation in the quarry, thereby eliminating expensive car and track maintenance.

Shale requirement for cement manufacture is 1500-1600 t.p.d. for a 7-day week, requiring the production of 1870 tons of minus 3-in. shale per day, operating a single shift, six days a week at the quarry. A new plant of 500 t.p.h. capacity was built which is far in excess of present requirements but was designed for increased future demands. It has provision for 30,000 tons of sized material in stockpile as a reserve against breakdowns and to minimize the need for winter operation.

The quarry is excavated on a 40-ft. face. Shale occurs as a bedded structure and is friable above and massive below. It varies considerably in toughness and has an analysis typical of most shales. However, it contains numerous rounded iron concretions which are high in non-magnetic iron and in sulphur content. They vary in size and have extremely high strength. A sample of a 2-in. cube from one of

these concretions had a compressive strength of 34,000 p.s.i. Its analysis was 9.20 silica as  $\text{SiO}_2$ , 7.50 percent iron as  $\text{Fe}_2\text{O}_3$ , 2.40 percent alumina as  $\text{Al}_2\text{O}_3$ , 28.32 percent  $\text{CaO}$ , 12.09 percent  $\text{MgO}$  and the loss on ignition was 38 percent. Since these concretions are rough on crushers, practice is for the shovel operator to set the larger ones aside in the quarry.

Six inch blast holes are drilled to a depth of 45 ft. by a Joy Middleweight Champion rotary drill. They are spaced 12 ft. apart with 16-ft. burden, in a single row, and a typical blast consists of 8-12 holes detonated by millisecond delays, with blasting caps placed in the bottom of each hole.

Based on averages for a 7-hr. work day, the rotary drill produces 225 ft. of hole as compared to 60 ft. for the churn drills displaced. The tri-cone bit has an average life of 3000 ft. of hole and often does considerably better depending upon the amount of concretions encountered. Very little secondary breaking is needed.

A 4-cu. yd. steam shovel loads three diesel-powered, end-dump Tournotracers which deliver the shale over a short haul to the plant. These rubber-tired haulage units have a rated capacity of 18 tons but have built-up side boards and carry 20-22 tons.

The plant is of gravity design and is totally enclosed. Shale is received at ground elevation and the plant foundations are on the quarry floor. Principal production unit is a size 5050 Cedarapids double-impeller impact breaker, which was selected for



New kilns are fed by variable speed inclined screw feeders drawing material from overhead horizontal supply screw conveyor. A duplicate circulating system for kiln feed material serves the



new kilns. Each consists of inclined 18-in. screw conveyor delivering into a separate elevator which transfers to long horizontal screw conveyor overhead to the four kiln dust chambers. Curved airslide returns excess to the elevators

its high ratio of reduction and for its low maintenance characteristics. This crusher will receive quarry-run shale up to 50-in. size in any dimension and produce 500 t.p.h. of minus 3-in. shale at this plant. Each impeller is driven through V-belt by a 150-hp. motor.

Shale is dumped on to a 50-in. manganese steel apron conveyor (Cedarapids), 14 ft. 6 in. long, which transfers the shale over a 6- x 12-ft. Robins Vibrex, heavy-duty scalping screen. This is a single-deck vibrating screen and its purpose is to by-pass much of the fines ahead of the crusher. It carries 4- x 4-in. square openings of manganese welded, perforated plate with wearing ridges superimposed. Oversize is chuted into the crusher, and the crusher product and screenings are put over a 6- x 16-ft. Robins single-deck sizing screen via belt conveyor. This screen has a woven wire deck of 3- x 3-in. square openings. Oversize is returned to the crusher by a belt conveyor. A Jeffrey vibrating feeder makes the transfer to the belt. The circulating load is 15-20 percent. Shale passing the screen openings is put into stockpile outside by a 30-in. stacking belt conveyor.

A 36-in. belt conveyor in a reinforced concrete tunnel below the stockpile is the means of transfer to a hopper over the loading tracks for rail haul to Alpena. Capacity of the stockpile is 30,000 tons of which 7000-8000 tons is reclaimable by gravity. A 48-in. Jeffrey vibrating feeder under the center of the pile feeds the shale to the loading belt at the rate of 700 t.p.h.

Empty cars are placed on two parallel loading tracks by the D & M RR Co. They are moved by car puller under the two loading points. A train of empties is brought in twice a day and two loaded trains are hauled away daily.

The shale plant has been in operation since August, 1953. An exhauster was first used to blow dust out of the structure but has recently been displaced by a Johnson-March system of dust control.

Impeller bars on the Impact Breaker are of manganese steel and the breaker bars are of chrome-nickel steel with manganese protective sleeves. Impellers were first driven at 480 r.p.m. but have been slowed to 375 r.p.m. to reduce the production of fines. Leakage from the hoppered cars and dust losses in the cement plant dryers were the reasons for the change. Thusfar, the crusher has operated without shutdown except for brief intervals to hard surface impeller bar edges at intervals ranging from two to six weeks. It is crushing many of the smaller-sized iron concretions which go undetected by the shovel operator in the quarry.

#### Raw Handling — Drying

Methods of handling stone and shale preliminary to proportioning and grinding have undergone little change over the years, except for the installation of scalping screens ahead of the stone hammermills, and in other details that have not altered methods.

Limestone is drawn from dryer feed bins and fed by apron feeders through four stoker-fired 8- x 100-ft. rotary dryers. The dried stone from each dryer is put over a scalping screen (½ in.) ahead of a 3642 Jeffrey hammermill. Minus ¾-in. stone from the four crusher-screen units is transferred from a collecting screw conveyor by apron feeders (2) to bucket elevators (four for each feeder) from which four overhead distributing screw conveyors place the stone into storage. Storage capacity is 50,000 tons, of which one-half is reclaimable by gravity.

Two 36-in. tunnel belt conveyors are fed stone from storage through rack and pinion gates, each delivering to a 36-in. inclined bucket elevator which transfers to screw conveyors filling sample bins. There are three rows of nine flat-bottomed sample bins, each of 125 tons active capacity. One of these bins is for iron ore, when it is necessary to add iron. The other 26 bins are used for limestone. Each bin is analyzed and stone is drawn from a minimum of two bins in any desired combination over 36-in. belt conveyors for further processing. These conveyors transfer via a two-way spout either to a 24-in. inclined belt conveyor for transfer into a masonry stone bin or to a 36-in. belt conveyor followed by a second inclined belt conveyor filling two stone tanks serving the new proportioning scales.

Shale cars are dumped at the end of the dryer building and a feeder regulates the flow either to a belt conveyor followed by a bucket elevator, or to a McCaslin conveyor, for transfer overhead into two 30-ton dryer feed bins. There are two 7- x 100-ft. stoker-fired rotary dryers. Dried shale from each dryer is put through one of a pair of 3642 Jeffrey hammermills for reduction to minus ¾-in. size. A collecting screw conveyor transfers to a tunnel belt conveyor which can be the means of direct transfer over a second belt conveyor to two 40-ton raw mix proportioning bins for shale alongside the stone bins. Iron ore is handled by the same system and is discharged into a sample bin over proportioning scales.

Some of the shale may be by-passed via screw conveyor to bucket elevators and placed into storage by overhead belt conveyors, in order to build up a surplus of dried shale during the week. Such shale may be drawn off and transferred to the belt conveyor

system delivering to the proportioning bins.

The drying department is served by electrical precipitators. Dust so collected is transferred by separate collecting screw conveyors, one for stone dust and one for shale dust, to separate elevators and placed into the separate large storage bins for dried limestone and shale. These precipitators have been rebuilt, those (2) for the shale dryers having been re-fitted with aluminum rod collecting electrodes and copper twisted discharge electrodes, because the gases are of low moisture and temperature and are sulfur-corrosive.

#### Proportioning Raw Materials

Arrangement for proportioning raw materials is entirely new, displacing one that had become inadequate and which was dismantled. The system with its two stone and two shale feed bins and proportioning scales is located at the southeast corner of the raw mill building housing the nine older 7- x 26-ft. Compeb mills. A new building extending west from and attached to this raw mill building houses the two new 9½- x 15-ft. ball mills. Thus, there are 11 mills arranged in a single row. Inside the southeast end of the building is the sample bin for iron ore storage.

Proportioning equipment consists of two pairs of Richardson contin-u-weigh scales for limestone and shale, each served by a separate overhead feed storage bin. Also, there are two Contin-u-weigh scales for iron ore which draw feed from the sample bin, and each of which is tied electrically with a pair of scales for stone and shale.

This type of proportioning scale is of the belt-weighing type and has large capacity for the space required for its installation. The two pairs of stone and shale scales (with or without iron ore added) proportion the raw mix for all the mills. The requirement is for 360 t.p.h. of blended material (618 lb. per bbl.) but they have far more capacity than that in anticipation of possible future enlargement of the raw mill. Each pair of shale and limestone scales has a single drive motor with Master Speedranger drive, providing an infinite speed range within a limiting range of 1 to 3. Output may be varied either by adjusting the beam balance to change the weight of material carried per foot of belt, or by changing the belt speed. By having a single drive, the proportions of limestone and shale are held absolutely constant. The iron ore scale has an electrical interlock with the common drive.

Proportioned materials from either or both sets of scales discharge to a cross belt conveyor (iron ore is added



One of two pairs of proportioning scales, for shale and limestone, which supply feed materials for all 11 grinding mills. Since this picture was taken, a common, infinitely variable speed drive (range 3:1) was installed for each pair of scales.

on the belt by screw conveyor) which transfers to a long inclined 36-in. belt conveyor, delivering in turn to a 42-in. overhead shuttle belt conveyor. This conveyor distributes proportioned material into any of the separate grinding mill feed bins. Selection of bins is done manually.

#### Raw Grinding

Feed into each of the older grinding mills is regulated by Hardinge Feedometers. Each of these nine mills is closed-circuited with a 14-ft. Raymond mechanical air separator, with Airslides delivering the mill discharge to an enclosed bucket elevator from which an overhead Airslide transfers into the air separator. Rejects are returned to the mills in each case and the fines are carried away by Airslides.

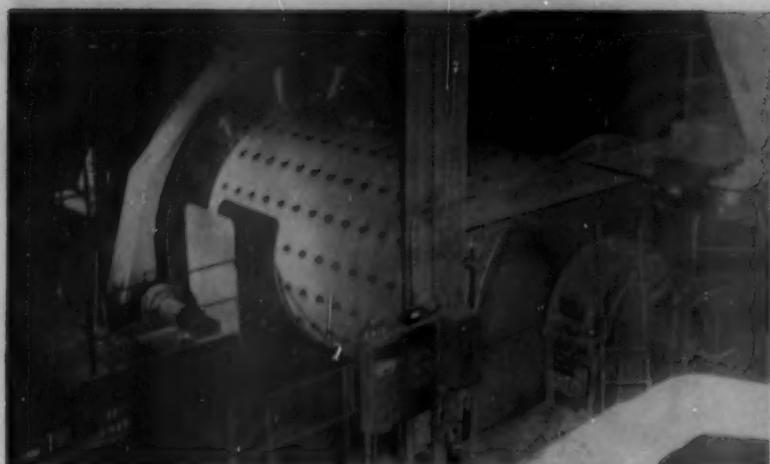
Each grinding circuit is vented by

an American Wheelabrator bag-type dust collector. Dust so recovered, and stack dust from the kiln dust collectors, are returned into the grinding circuit. Kiln stack dust is put into a large dust tank from which it is drawn for return into each raw grinding circuit in controlled amounts. Each of the nine mills produces 30 t.p.h. of 91 percent minus 200-mesh product.

Each of the two new raw grinding mills is a 9½- x 15-ft. Allis-Chalmers single-compartment Preliminary, driven at 19 r.p.m. by a 700-hp. A-C synchronous motor through magnetic clutch. They carry a charge of 107,000 lb. of 1-3-in. forged steel grinding media. Feed of proportioned materials is from 200-ton cone-hoppered feed bins by Hardinge Feedometers, and each is closed-circuited with a 16-ft. Raymond mechanical air separator,



New raw mills discharge to Airslides which deliver to bucket elevators from which air separators are fed.



One of two new 9 1/2 x 15-ft. ball mills for raw grinding. Each is delivered proportioned material from the bin and feeder on the right. The mills are closed-circuited with individual mechanical air separators.

with rejects returning to the mill. Mill discharge is conveyed by 14-in. Airslide to an enclosed bucket elevator from which the air separator is fed.

These mills are equipped with the Hardinge electric ear which is sensitive by sound detection to changes in amount of material in the mill and automatically shuts off, and re-starts the feeder motor to maintain the optimum level of material in the mill. The feeder has a constant speed drive and shuts off and starts up again very infrequently. A Bindicator on the Airslide located at the point where it receives material from the mill is a safeguard against overloading the system. Should the Airslide fill up at that point, the entire grinding circuit will automatically be stopped. Each mill is

producing 45 t.p.h. of kiln feed material.

The mills, elevators, conveyors and bins in this new building are vented by a 28,000 c.f.m. Norblo bag-type dust collector. Dust from the collector is returned to the collecting Airslide carrying the fines from the air separators.

Raw mill product is conveyed from the mill building by two parallel Airslides and the stream is divided between three 36-in. bucket elevators which have a three-way discharge. The stream may transfer to two parallel Airslides to supply the kiln feed bins for the older kilns or the surplus may be diverted into any of five 500-ton raw mix storage bins.

If desired, the stream may be passed

over the kilns by a system of screw conveyors and airslides to correcting tanks and then be returned to the kiln feed bins. Material in the 500-ton storage bins is reclaimed by screw conveyors to the same elevator system for transfer to kiln feed bins. The third choice is to transfer from the end of the Airslide over the storage bins to a new Airslide which conveys raw mix to a pair of 30-in. bucket elevators filling a 500-ton steel bin from which the four new kilns draw their feed.

#### New Kiln Feed System

The new 500-ton bin from which the four new kilns draw their feed is adjacent to the feed ends of these kilns. The kilns are designated as Nos. 13-16. Kiln No. 13 has its firing end opposite to that of kiln No. 12 and Nos. 14, 15 and 16 are opposite Nos. 11, 10 and 9, respectively.

A pair of 18-in. inclined screw conveyors draw kiln feed material from the bottom of the large bin. Each transfers to a separate 30-in. bucket elevator feeding to a 16-in. horizontal screw conveyor extending over the four kiln dust chambers and from which each kiln feeder draws its supply. This is a duplicate system and only one of each arrangement of elevators and conveyors is required. The second one is to insure continuity of operation and to permit shutdowns for repairs without interruptions to kiln operation.

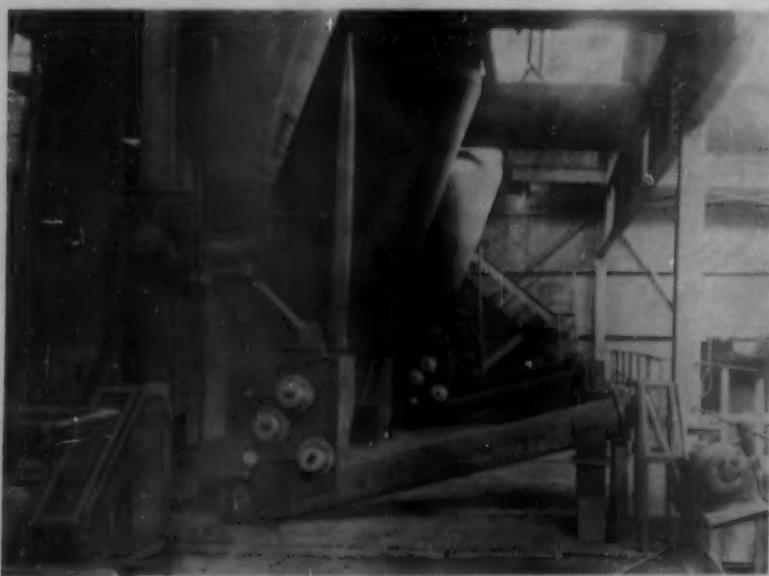
It is a circulating system, with surplus carried by the 16-in. screw conveyor returning via Airslide into the boot of the elevator. Should material fill to too high a level in the elevator boot, a Bindicator at the high end of the inclined screw conveyor will automatically stop the conveyor drive motor until the system clears. A second Bindicator located at the upper end of the surplus airslide is an added safeguard against plugging in the system.

The inclined screw feeders, elevators and overhead horizontal screw conveyors have constant speed drives. Inclined kiln feed screws tapping off feed from the main screw conveyor are driven by two-speed Master Speedrangers. These drives are infinitely adjustable within a range of 3:1 in order to maintain an accurate rate of feed.

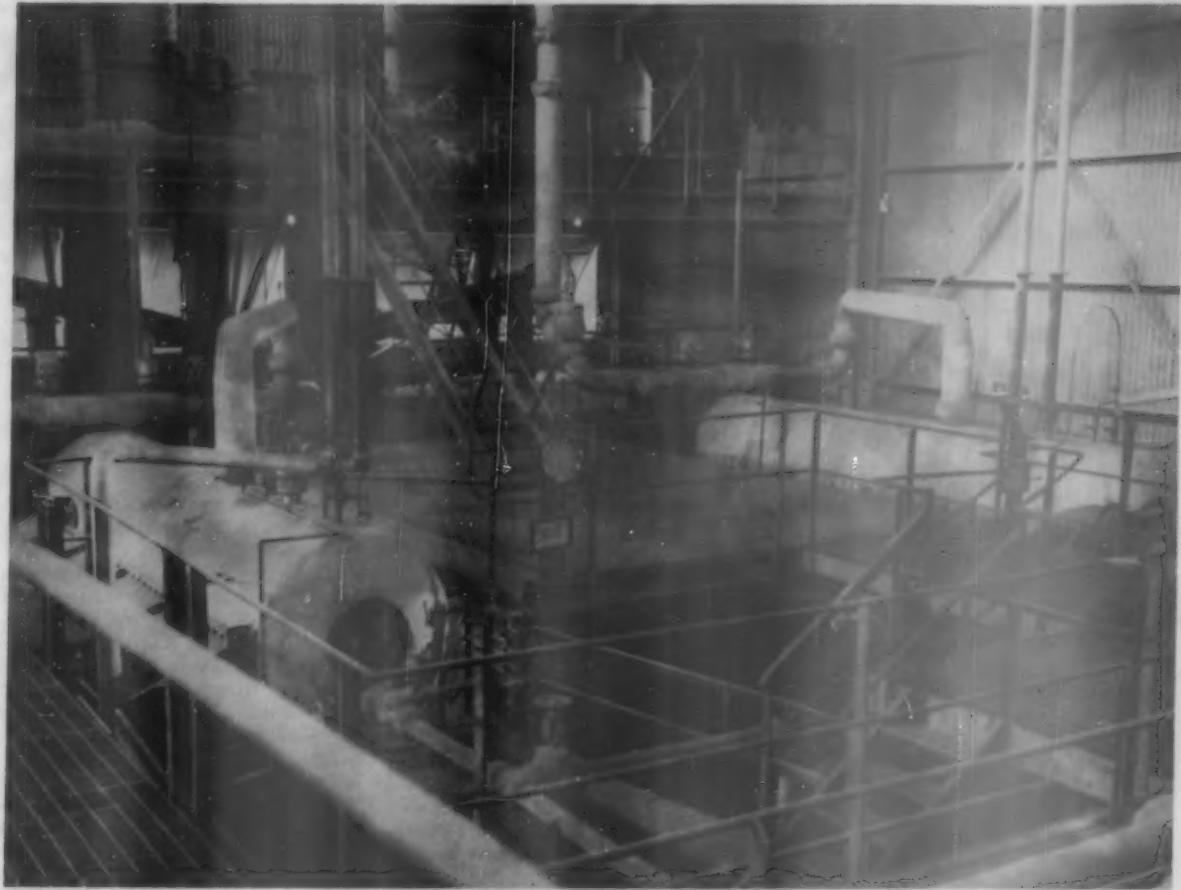
#### New Kilns

A part of the No. 2 clinker storage and craneways was removed to provide a location for the new kilns that will permit future kiln additions.

The new Allis-Chalmers kilns are 10 ft. x 153 ft. 6 in. and are identical to kiln Nos. 11 and 12. They are fired with pulverized coal and discharge clinker over Fuller inclined grate cool-



Four new kilns are fired with pulverized coal by the bin system. Pulverized coal from the overhead bins is delivered by these adjustable speed drives into the discharge line of a primary air blower.



View above new 1000-hp. waste heat boilers and economizers

ers. Lining consists of 35 ft. of 70 percent alumina brick at the firing end, followed by intermediate zone lining and then by first quality fire brick extending to the feed end.

An interesting point is that the new kilns are fired by the old type of bin system as used on the original 8- x 110-ft. kilns. The other 12 kilns are fired by unit coal pulverizers. The bin system of supplying pulverized coal to each kiln provides better control of the coal: primary air ratio, based on the company's experience. These kilns, incidentally, are producing substantially more clinker than other identical ones in the plant.

Two old Fuller mills of 5 t.p.h. capacity each were installed in the coal house. They and four existing Raymond roller mills are supplied dried coal from the old dryers. Combined output of the six mills now supplies coal pulverized to 95 percent through 100-mesh to the eight small kilns and the four new ones.

A new 7-in. type H Fuller-Kinyon pump, supplied with air from a C-100 Fuller rotary compressor, delivers pulverized coal through a 6-in. line into the new kiln building. The line termi-

nates at a 6-ft. alleviator above the building and, from it, an Airslide delivers coal to individual pulverized coal tanks which extend through the roof of the building. The bins are drawn from through rotary feeders. At each kiln, a constant-head feeder feeds the coal from the tank into the discharge line of a primary air blower. The burner adjusts the coal feed rate as needed.

Burner pipe tips have no air or water-cooling. They are of 25:12 chrome-nickel alloy steel and barely extend inside the kiln hoods. Firing is done with 30 percent primary air. Ohio coal of 12,500-13,000 B.t.u. heat value, and with 11-12 percent ash, is used.

The kilns are each equipped with a 1000-hp. Wickes waste heat boiler, Green fuel economizer and Research Corp. electrostatic precipitator, and are exhausted by an induced draft fan driven by a 100-hp. motor. The older kilns also have separate boilers, economizers and Cottrell precipitators of the same capacity.

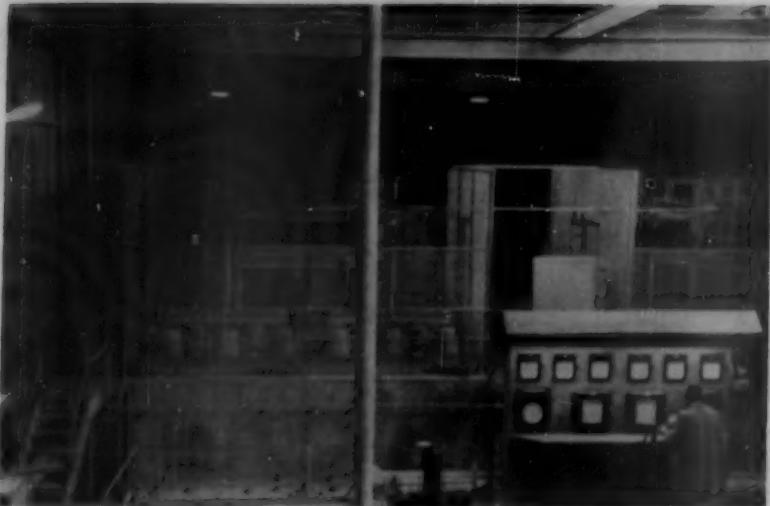
Boilers on the new kilns are, however, of a newer type, of bent tube, single-pass design. They have no baffle walls and are designed for straight-line

passage of the gases. Absence of baffles reduces draft loss and maintenance of boiler tubes. Superheaters are of the pendant loop type with headers above the boiler, and are designed for steam pressures of 225 p.s.i. at 550 deg. F. Steam is developed at 550 deg. F., 215 p.s.i. and is delivered to the turbine-generators at 190 p.s.i. pressure and 450 deg F., as needed.

Economizers are also of new type, consisting of a series of steel tubes in the form of horizontal loops attached to headers. Gases enter at the top, pass downward and out into a horizontal duct and then upward into the precipitator.

Electrical precipitators are different from the graded resistance type serving the older kilns. They were designed by Research Corp. and consist of a steel shell with two successive banks of electrodes. Each bank has a series of vertical collecting electrodes 17 ft. 6 in. high and 9 ft. long spaced on 8½-in. centers. The electrodes are perforated double steel plates ½ in. apart and are suspended from an overhead frame.

Discharge electrodes are ¼-in. twisted steel rods suspended at the



View above new waste heat installation, showing instrument board and electrical precipitators beyond.

top and held in place by guides and weights at the bottom. They are on 7-in. centers in rows spaced centrally between the collecting electrodes. A new type magnetic impulse rapping device is used on the collecting electrodes and, by timer control, there is an almost continuous discharge into the hoppers. Voltages up to 75,000 can be used and, with a gas velocity of 4 ft. per second, the collection efficiency is as high as 99 percent.

Gases enter the boilers at 1600 deg. F. where the temperature is reduced to 600 deg. F. for entry into the economizers, and the exit gas temperature is 400 deg. F.

All kilns have been equipped with Fuller inclined-grate, air-quenching clinker coolers. Those for the new kilns extend out from the kiln hoods rather than the reverse direction. They have clinker breakers and discharge on to an 18-in. belt conveyor which

transfers to a second 18-in. belt conveyor delivering to a main 30-in. clinker tunnel belt conveyor. They are among the first such coolers to be equipped with Buell "LR" fly ash dust collectors. These are relatively low efficiency, low resistance units in which the dust-laden air enters at high velocity, for rapid slowing to low velocity and settling of the particles within the hopper. They require comparatively low power and have a collection efficiency of 99 percent of the plus 100-mesh particles. Dust discharges from the collecting hopper to the clinker collecting belt conveyor immediately below.

Kilns are driven by 2-speed drives and speed is limited to a top of 45 r.p.h. which is considerably lower than average practice for the industry. The raw materials are fluid and tend to come down through the kiln too rapidly when the kilns are driven faster

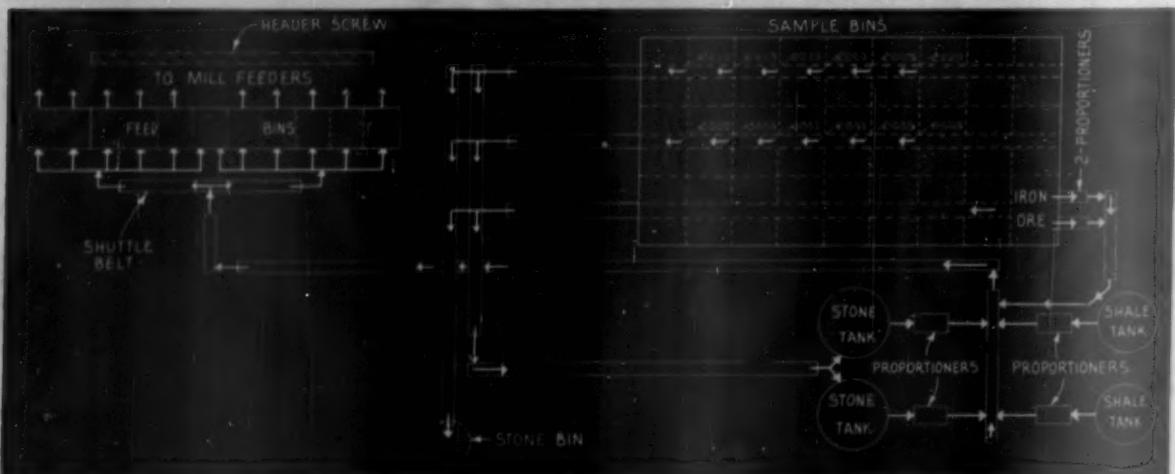
than 45 r.p.h. At higher speeds, dusting also becomes considerable.

There are two automatic features to operation of the new kilns. One is automatic control over the clinker cooler grate speed to maintain the secondary air temperature at 1200 deg. F. The second is draft control which is regulated by an L & N automatic draft controller. Draft fans are of the double-inlet type with dampers at both inlets. Draft is maintained at .04 in. at the kiln hood and is 1½-2½ in. as measured leaving the economizers. The induced draft fans pull about 60,000 c.f.m. of kiln gases. Coal requirement is 100 lb. per bbl. of clinker produced.

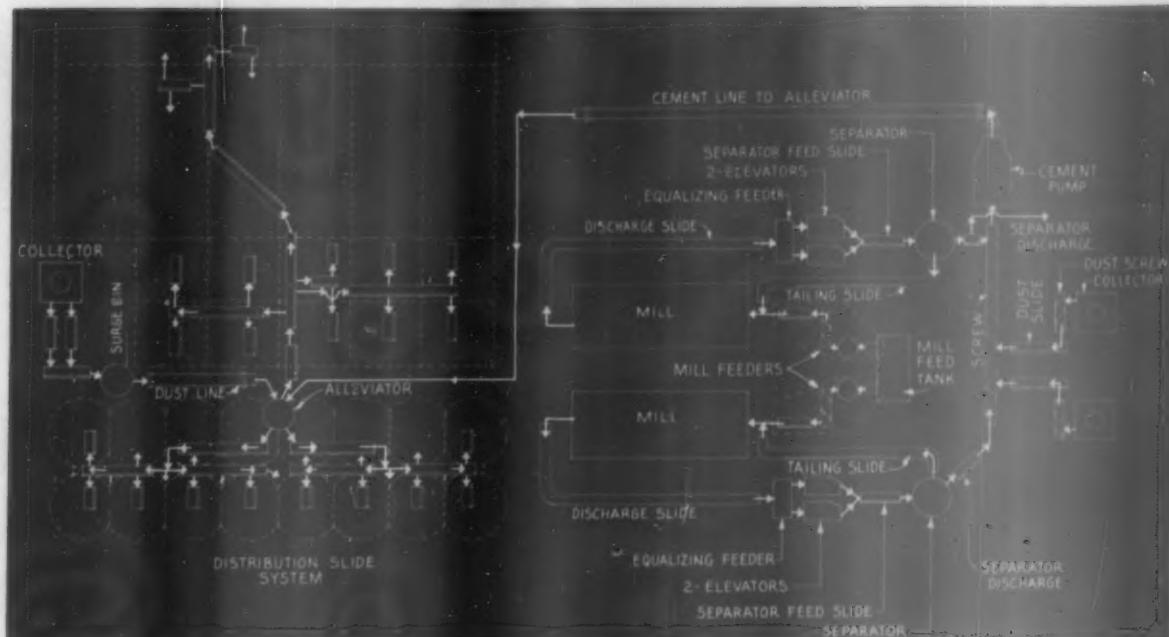
#### Dust Disposal

Utilization and/or disposal of stack dust has presented a problem like in the majority of plants, and a flexible arrangement has been devised for dust return into the kilns. Dust from the new kiln dust chambers and from the hoppers of the boilers and economizers is conveyed by a series of collecting screw conveyors to a main screw conveyor from which an elevator places it into a surge tank. Dust from the precipitator hoppers is similarly handled and elevated into an adjoining tank.

Inclined feed screw conveyors below each tank, each driven through an Adjusto-Spede drive, blend the desired amounts of each type dust into the feed hopper of a 6-in. Fuller-Kinney pump. The blend is transported through a 6-in. line into the old 500-ton dust storage bin from which dust is drawn for return into the raw grinding circuits. All or a part of the precipitator dust may be diverted into a third tank to be pumped to waste. Equipment for disposal to a waste pile consists of an Allen-Sherman-Hoff Hydrovactor which operates on the



Two pairs of interlocked feeders (right) proportion limestone and shale (a third pair installed for iron ore), and the blend is conveyed by belt conveyor to separate bins for each raw mill.



Two new 8- x 37-ft. finish mills are in closed circuit with individual air separators and usually grind masonry cement and high-early-strength portland cement.

high-pressure injector principle, creating a vacuum to drive the dust through a pipeline by suction. This is a dry line to the Hydrovactor, at which point water is introduced for disposal as a slurry.

The large dust tank also receives dust from the other kiln installations by way of screw conveyors, Airslides and bucket elevator. Dust is drawn from the bin by airfeeder into a screw conveyor from which it is elevated to a long 18-in. screw conveyor spanning the length of the raw mill building. It is drawn from the conveyor in controlled amount at each mill by variable-speed screw feeders discharging into the boots of the bucket elevators handling the mill stream to the mechanical air separators in each case. The main screw conveyor carries an excess flow with the surplus returned by Airslide and elevator to the source bin. Thus, the dust is returned without passing through the grinding mills.

#### Clinker Handling

Methods for handling clinker, gypsum and limestone (for masonry cement) into storage, the new clinker stockpiling system and methods of reclaiming to the new proportioning and scale building are representative of modern and flexible large capacity material handling and are a feature of the plant. The system is belt conveyor throughout and was designed for efficient handling of both regular and special clinker and, in connection with new finish mill additions, permits the simultaneous grinding of high early strength and masonry cements along

with the grinding of types I or IA.

The scale and proportioning plant replaces the old system and has adequate capacity to accommodate increased future requirements. It is the center for the distribution of all materials for finish grinding and for loading clinker into lake vessels for shipping. Clinker from all kilns passes through this building and into storage. It is located at the east end of No. 1 clinker storage.

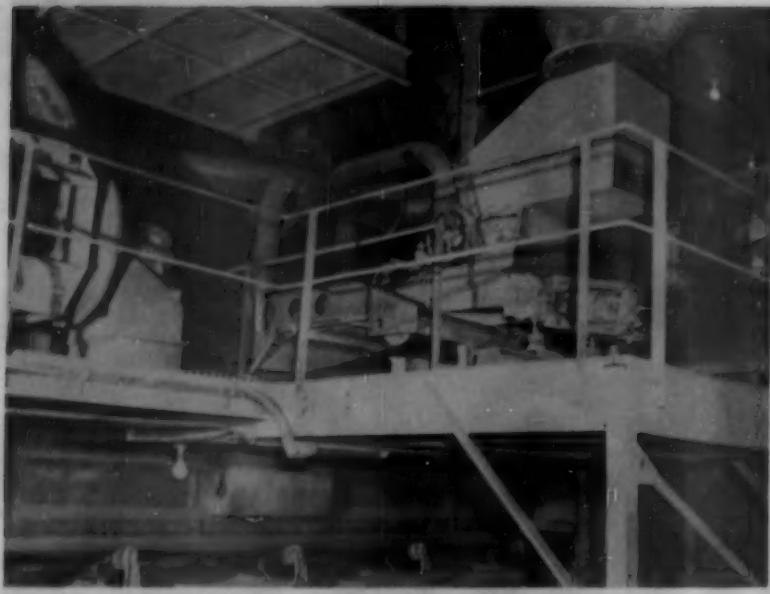
Starting at the No. 2 clinker storage, the existing 24-in. tunnel belt conveyor was extended to the north and used to convey masonry stone from the raw mix building. The head pulley was elevated above the tunnel to discharge on to a new 24-in. belt

conveyor on 480-ft. centers delivering overhead into the scale building. Here, it transfers to a third short 24-in. belt conveyor for discharge into a 1000-ton steel storage bin from which the stone is drawn as required to the proportioning scale feed tank.

A new 30-in. clinker belt conveyor was installed in the tunnel paralleling the stone belt. It transfers to a second 30-in. belt conveyor, delivering clinker overhead into the scale building. From the head of the clinker belt, inside the scale building, transfer is made to a third 30-in. belt conveyor on 458-ft. centers delivering out to the storage stockpile. Rate of stockpiling is measured by a Merrick Weightometer on the stockpiling conveyor.



Clinker is continuously weighed by this scale as it is conveyed to storage.



Proportioning equipment for masonry cement

This arrangement of three conveyors handles the clinker from the No. 2 kilns (all 10- x 153-ft.). From the scalehouse, clinker delivered from pit No. 2 can transfer to another belt conveyor to be placed into clinker pit No. 1 if desired.

In order to blend clinker from No. 1 storage, an inclined 30-in. belt conveyor was installed to receive clinker from the vessel-loading belt conveyor (drawing from No. 1 storage) and to deliver into the top of the scalehouse. From this point, transfer is to the 30-in. stockpiling belt conveyor but the flow can be diverted to discharge to the masonry cement proportioning

system. Thus, special clinker can be stored in No. 1 storage pit and be reclaimed for the grinding of masonry or high-early-strength cements, while I or IA is being ground at the same time.

Clinker storage in one large stockpile, using belt conveyors for stockpiling and for reclaiming, is new practice for the portland cement industry. Design and construction of the system are also unusual.

The 30-in. stacking belt, on 490-ft. centers, delivers clinker at the rate of 500 - 600 t.p.h. out to a 36-in. reversible shuttle belt conveyor on 150-ft. centers. The stockpile is built over a

reinforced concrete reclaiming tunnel east of the scale and proportioning plant. The concrete tunnel is about 600 ft. in length with its top at grade, and was designed for reclaiming clinker from a stockpile up to 2,000,000 bbl.

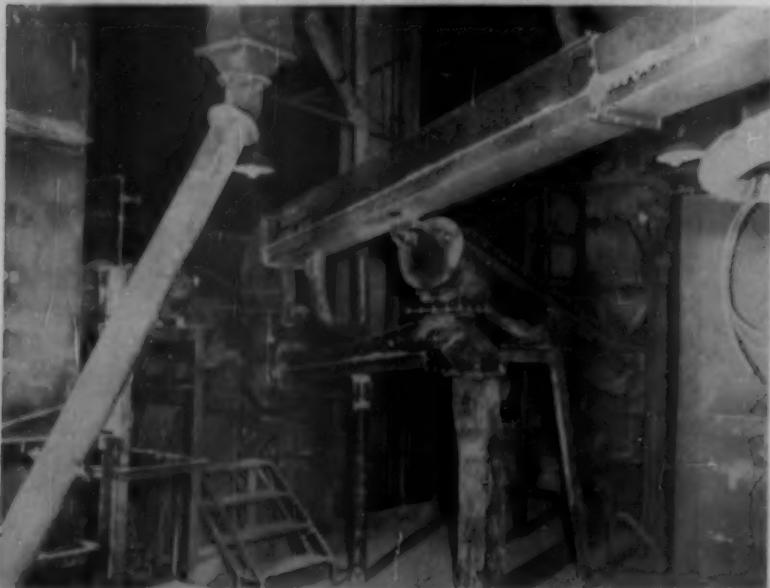
Incorporated into the tunnel are three massive concrete footings spaced 117 ft. on centers. Supports for the overhead stockpiling shuttle conveyor consist of three 90-ft. high steel pipe columns anchored in these footings, each of which is 9-ft. diameter at the base and tapering to 6-ft. diameter half-way to the top. They are filled with concrete. These columns support 310 ft. of gallery containing the shuttle conveyor. Clinker coming off the end of the shuttle conveyor discharges to the pile by way of a step-down system alongside a supporting column that is very similar to some of the stone ladders we have observed in the aggregates industries. Clinker will flow out onto the pile from the lowest opening in the ladder and, after that opening is submerged with raising of the pile, from the next higher opening and so on.

When the stockpile is completely filled, it will be 96 ft. high, will be 300 ft. long at the crest and 600 ft. long at the base. The material assumes an angle of repose of 31 deg. Storage capacity could be built to 2½ million bbl. if bulldozing be used to return excess clinker over the reclaiming tunnel.

Construction of the reclaiming tunnel was accomplished at high speed through use of a special travelling steel form designed for the purpose by the contractor. A series of openings with draw-off gates spaced at 30-ft. intervals along the top of the tunnel permits draw-off of clinker to a 42-in. belt conveyor in the tunnel. This belt discharges to a second 42-in. inclined belt conveyor at the north end of the tunnel returning clinker to the scalehouse bin or for transfer at that point to a belt conveyor for loading clinker into vessels.

The inclined belt conveyor is on 487-ft. centers and is enclosed in a conveyor gallery. This conveyor and the tunnel conveyor have 4-speed drives, permitting a range of capacities up to 1350 t.p.h., from which 1000 t.p.h. may be diverted to the vessel loading system. The shuttle belt conveyor is operated by remote control from a push-button station in the scalehouse.

Ventilation of the clinker tunnel is provided by means of a dust collector and large diameter duct the full length of the tunnel which has connections to hoods over the belt at each feed spout. A 12,000 c.f.m. exhauster draws the air through an American Air Fil-



View of feed arrangement for new compartment finish mills. Rejects from air separator are returned by airslide

ter Co. Amerclone dust collector located on the top of the tunnel at its north end. Dust is returned directly onto the inclined belt conveyor.

#### Proportioning

Gypsum is conveyed to the scale and proportioning building by a new handling system. From an existing 24-in. bucket elevator in the gypsum dryer building a short 18-in. belt conveyor was installed for transfer to an 18-in. belt conveyor which runs overhead along the north side of No. 1 clinker storage. This conveyor fills a 300-ton steel storage bin just north of the scalehouse. Gypsum is withdrawn from this bin by screw conveyor to a bucket elevator from which two short belt conveyors feed three proportioning bins in the scalehouse.

Within the scalehouse, clinker is drawn from the main bin to Jeffrey Waytrol feeders which are the means of feed to Allis-Chalmers type R clinker crushers. There are four of these crushers of which three are ordinarily in use. They were transferred from the old finish grinding mill to the new building, and serve to reduce the clinker to 1-in. top size. Crushed clinker drops into two clinker bins over the proportioning scales.

Like in the raw mill, there are two sets of proportioning scales. Each set consists of a pair of Richardson Contin-u-weigh scales driven from one motor of which one is for clinker and one for gypsum. Proportioned materials are delivered by belt conveyors from the scales into the preliminary finish grinding building. Proportioning equipment for masonry cement consists of interlocked Jeffrey Waytrols, and the blend is delivered into the preliminary finish grinding building by belt conveyors.

#### Clinker Grinding

Grinding capacity for type I or IA cement was increased by 10,000 bbl. per day by adding the three new Bradley preliminary mills and two large finish compartment mills. There are now nine Bradley mills. The new ones are housed in an extension to the existing building. Foundations were provided for one additional mill. A separate new building just south of the preliminary grinding building houses the two new finish mills.

The new finish mills are used principally to grind masonry cement and high-early-strength portland cement. However, they may grind any of the four types.

Parallel belt conveyor systems delivering materials from the proportioning building into the Bradley mill building permit separate handling of materials for the special cements. A 30-in. belt conveyor transports pro-



New scale and proportioning plant. Note absence of windows. Preliminary clinker grinding building is shown, to the left.

portioned clinker and gypsum from the Richardson scales and discharges to a second inclined 30-in. belt conveyor delivering into a surge bin over the Bradley mill building. From this bin a system of 24-in. belt conveyors can distribute mill feed to bins serving all or any of the nine preliminary mills.

Paralleling the two 30-in. clinker belts, are two 24-in. belt conveyors, the first of which receives proportioned material from the Waytrols in the scalehouse. The second discharges into feed bins for each of the three new Bradley mills, which normally are set aside for masonry or high-early-strength cement grinding. Discharge from these mills can then be elevated and conveyed either to the old or new finish grinding mills. Fineness of grind through the preliminary mills is 600-700 sq. cm./gm., depending on whether high early or standard cements are being ground.

This is the first clinker grinding mill

department in the cement industry with a successful installation of electrostatic precipitators for venting mills, elevators, conveyors, transfer points, bins and other dust sources. Eight of the mills and related equipment are served by two 12,000 c.f.m. precipitators designed and manufactured especially for this installation by Research Corp. A third unit is to be installed, which will vent the other mill and draw dust-laden air from other points throughout the building. It also will supply the needed capacity for the anticipated addition of one more mill.

Dust-laden air is drawn through the precipitators by exhausters and they are operated at 65,000 volts. They have double steel plate collecting electrodes and discharge electrodes of  $\frac{1}{2}$ -in. twisted rods spaced vertically between the plates.

The precipitators have "MI" rappers for cleaning the electrodes, which were developed to minimize the buildup of residue on the collecting plates.



Some of the nine preliminary clinker grinding mills



Scale equipment for proportioning clinker and gypsum

An automatic, solenoid-actuated device produces a series of light taps at frequent intervals as contrasted to a series of heavy blows delivered at wide intervals. Purpose of the design is to keep the collecting electrodes clean of residue, to prevent rapping puffs which follow should a large accumulation be built up on the electrodes and then be suddenly dislodged under hard rapping, to increase efficiency and reduce maintenance costs.

These precipitators are being run at an efficiency in excess of 99 percent and, in handling a dust loading of 44 grains per cu. ft., are instrumental in collecting 400 bbl. of material per day. The dust is discharged into screw conveyors which deliver into the bucket elevators carrying the mill discharge

overhead for delivery to finish grinding mills.

#### Finish Grinding

Finish grinding of high-early-strength cement and masonry cement is done through the two new finish mills which are 8- x 37-ft. Allis-Chalmers two-compartment Compeb mills each operated in closed circuit with an 18-ft. Raymond double-whizzer mechanical air separator. These mills may also be used to grind type I and IA cements. Each is driven at 19 r.p.m. by a 1000-hp. A-C synchronous motor through a Cutler-Hammer magnetic clutch and Falk Steelflex coupling with anti-friction roller bearings on the drive shaft. The 16-ft. long preliminary compartment carries a

charge of 38½ tons of forged steel grinding media, 15½ tons of 1¼-in., 17 tons of 1½ in. and 6 tons of 2-in. size. Originally, the finish compartment had 55 tons of 1-in. grinding media to which seven tons of ½-in. size has been added. Plain division head screen plates separate the two compartments.

Feed material for these mills ordinarily is the product from the three new Bradley mills which is delivered by overhead belt conveyor into a common mill feed tank for both grinding mills. The bin is hoppered on two sides and feed is drawn from each end of this hoppered-bottom bin through constant head columns serving Airfeeders delivering into separate inclined screw feeders for each mill. An Airslide delivers the feed from each screw feeder into the mill. Bindicators above the Airfeeders actuate lights should the supply column fall below the established height.

Each mill discharges to an Airslide which divides the stream through an equalizing feeder to two bucket elevators which, in turn, discharge into an Airslide feeding into the mechanical air separator. Rejects are returned into the mill. Airslides deliver the cement from both separators into a collecting screw conveyor which discharges into the feed hopper of a new F-K cement pump. The cement line terminates at an alleviator over the cement storage silos.

Each mill and mechanical air separator has a 24,000 c.f.m. Norblo bag-type dust collector which vents the mills, conveyors, elevators and other dust points. Dust collectors have skimmers to scalp out much of the dust ahead of the collectors, and each grinding circuit has the Norblo cooling system whereby outside air is circulated through the air separator and vented through the dust collector. The cooling system is effective in reducing the temperature of the cement from a normal 270-290 deg. F. to 180 deg. F.

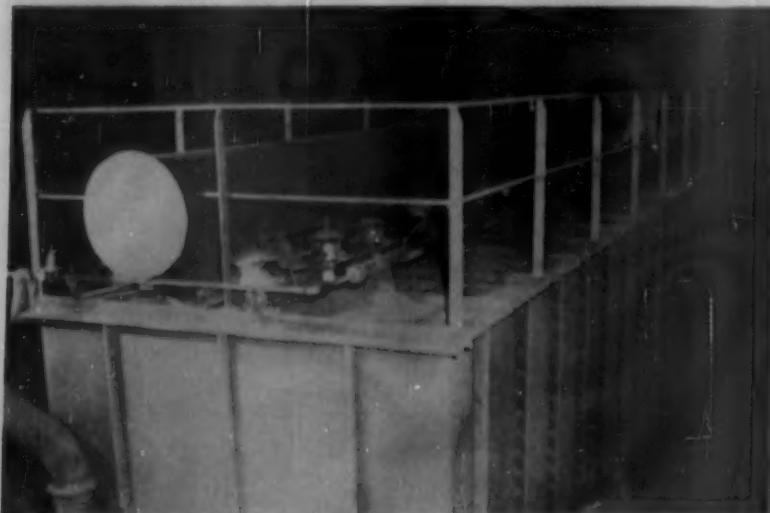
Dust from the two collectors is returned by screw conveyor and then Airslide into the main cement collecting screw conveyor.

Twelve older 724 Compeb finish mills are each in closed circuit with 14-ft. mechanical air separators, both Raymond and Sturtevant being in use.

#### Structures

All new structures are of steel construction with Transite siding. Sash and glazing have been completely done away with through the use of steel shutters instead, which is more economical construction and eliminates the problem of window maintenance. Adequate ventilation is obtained in the buildings through the opening of the

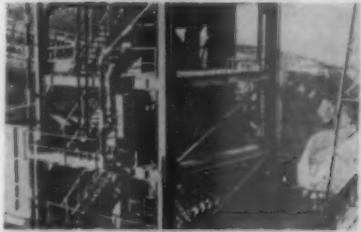
(Continued on page 124)



One of the large dust collectors in new finish mill which also serves to cool cement



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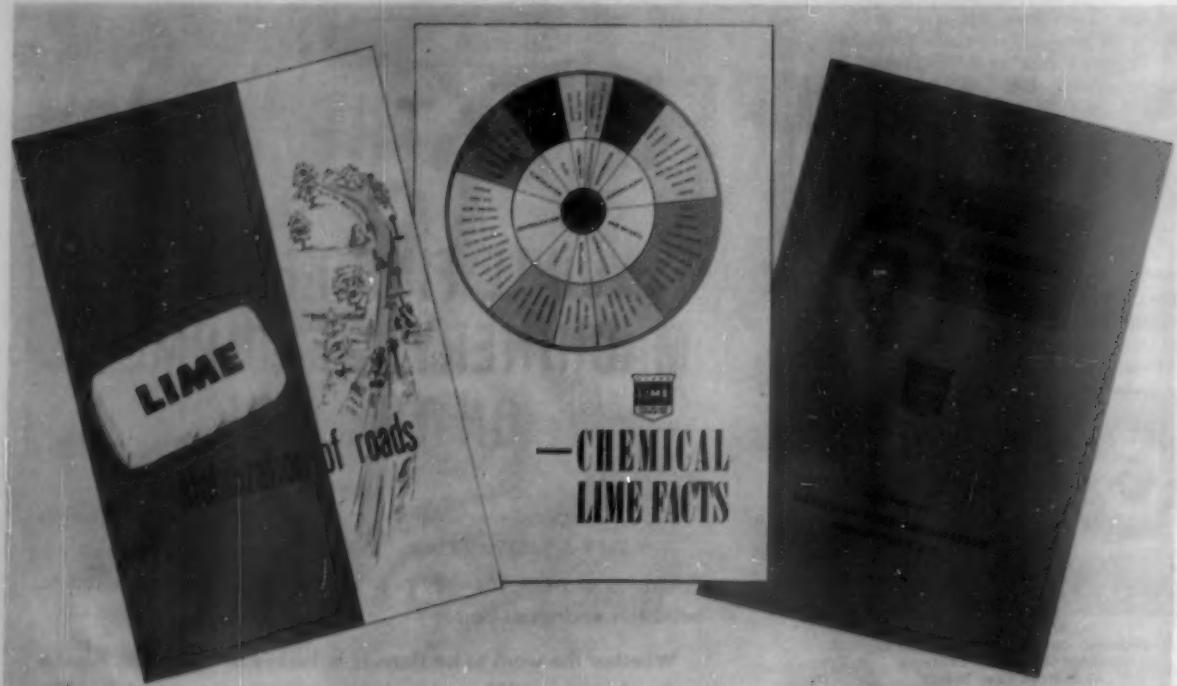
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Samples of current popular National Lime Association technical books which have resulted largely from the association research program

## Post-War RESEARCH By the National Lime Association

By ROBERT S. BOYNTON\*

IT IS RATHER IRONIC that lime, which qualifies as the oldest chemical reagent and raw material and one of the oldest building materials, has had historically probably the least research, both of a fundamental and applied nature, of all chemical and building materials.

Fortunately there are recent indications that this technical inertia that has been so long associated with lime (and its industry) is changing. The first evidence of this occurred shortly after World War II when the National Lime Association reorganized its overall program in which they placed considerably more emphasis on research. From 30 to 35 percent of the association's annual budget has been devoted to research since 1946; in contrast only 5 to 10 percent was expended before World War II.

- Program accelerated since 1946 is resulting in increased tonnage of lime for new and existing markets

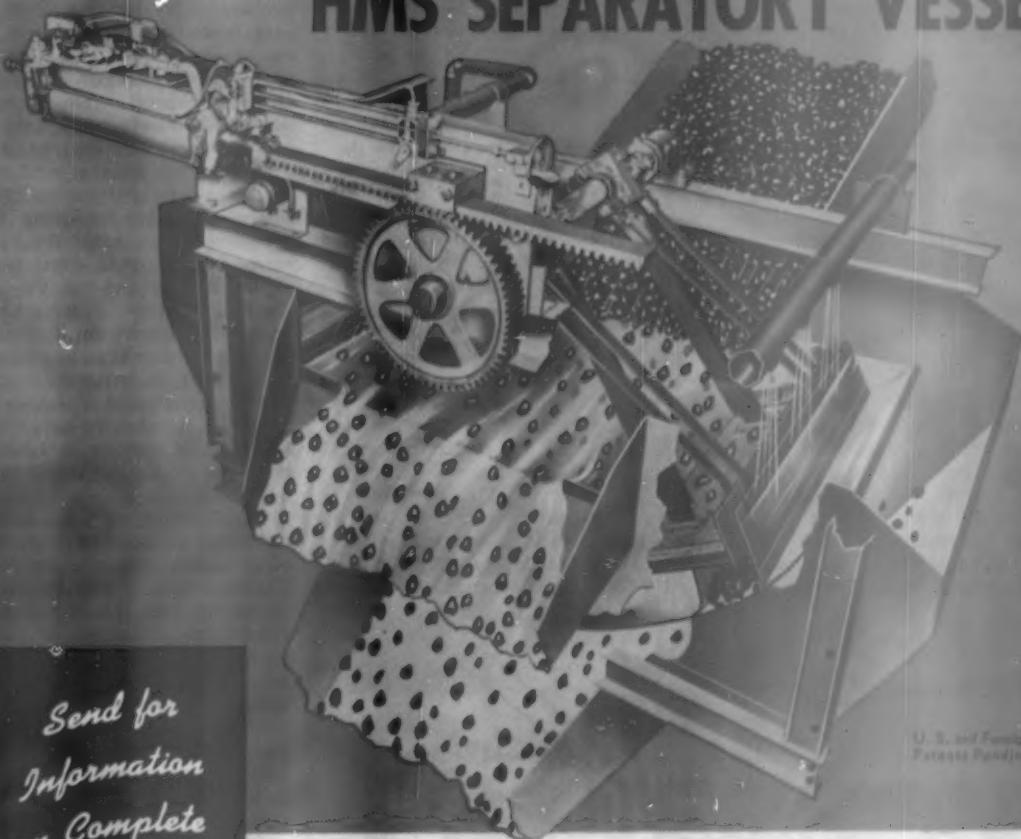
The decision of the Board of Directors of the National Lime Association to concentrate on lime research among their varied association activities was, of course, wise since most industries, whose products are directly or indirectly competitive with lime had pursued research vigorously for some years to their own benefit. Some of this research of competitive materials is obviously slanted at existing lime markets. Yet, this same approximate situation confronts virtually all materials. Consequently, it is a foolish industry that has not realized — at least in recent years — that losses in its established markets are inevitable; and that the only constructive course to follow is to develop new markets to replace those which will be lost to competitive materials and processes. Consider the present plight of industries like the clay products industry which has lost ground to con-

crete products; the leather industry in which plastics and synthetic textiles have cut serious inroads; and the much maligned butter industry, to name a few.

Let's analyze lime during the past eight years. Losses (at least, proportionately) in existing markets have occurred. Although finishing lime is still universally used for the finish coat in plaster, the tremendous growth of "dry wall" plaster as embodied by gypsum wall board has cut into plaster (and finishing lime) sharply. In many sections of the country, masonry cements have replaced lime-cement mortars, resulting in a serious loss for lime. These losses in the building field are purely relative since thanks to the tremendous postwar construction activity, there has been statistically no loss in tonnage on an industry basis. Meanwhile sulfate pulp mills have been recovering a greater percentage

\*General Manager, National Lime Association, Washington, D. C.

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of the lime for reuse in this process. This means that they purchase a smaller percentage of "make-up" lime commercially. Similarly, some water plants have reduced the lime consumption due to greater operating efficiency or changed processes.

Several large municipal water softening plants, notably at Miami, Fla.; Lansing, Mich.; and Dayton, Ohio, that formerly purchased large quantities of lime are now recovering lime for reuse, utilizing processes similar to sulfate paper mills or the Ful-Solids process. The total tonnage lost to the lime industry from these three plants alone amounts to 35,000-40,000 tons per year — a serious tonnage loss.

Chemical plants producing acetylene have been built that do not require calcium carbide, one of lime's largest markets. Processes have been developed for ethylene glycol that do not require any lime. The demand for other chemicals that require lime, like chloride of lime and monocalcium phosphate, have lessened. Other chemicals have replaced lime partially in such fields as grease manufacture, wire drawings, and leather tanning. "Spray" hydrate in the insecticide and fungicide fields has been adversely affected through the growth of organic insecticides, like DDT. These cited losses in

markets are not necessarily complete; other losses are also bound to occur in the future. Fortunately, new lime markets resulting from National Lime Association research have helped partially to compensate for these tonnage losses.

#### Neutralization and Trade Wastes

Industrial trade waste treatment and neutralization with lime are not new. Lime has been employed for many years for such purposes — but on a small scale. Increased stream pollution abatement and control since World War II has focused attention on the chemical treatment of industrial wastes which often require lime alone or in conjunction with other chemicals. Realizing this situation and that lime, in spite of its inherent advantages of offering basicity at low cost, lacked much fundamental information in its neutralizing capacities, efficiency in handling, sludge disposal, etc., the association established a fellowship at Rutgers University to concentrate on this field. Until two years ago this research program was under the direction of Dr. William Rudolfs, long recognized as one of the greatest sewage and trade waste experts in the whole world. Unquestionably this research has paid dividends to the lime industry. The research accomplishments of

Rutgers during the past eight years are summarized as follows:

(1) Publication of a 71-page booklet by the association but authored by Dr. Rudolfs on "Lime Handling, Application, and Storage in Treatment Processes."

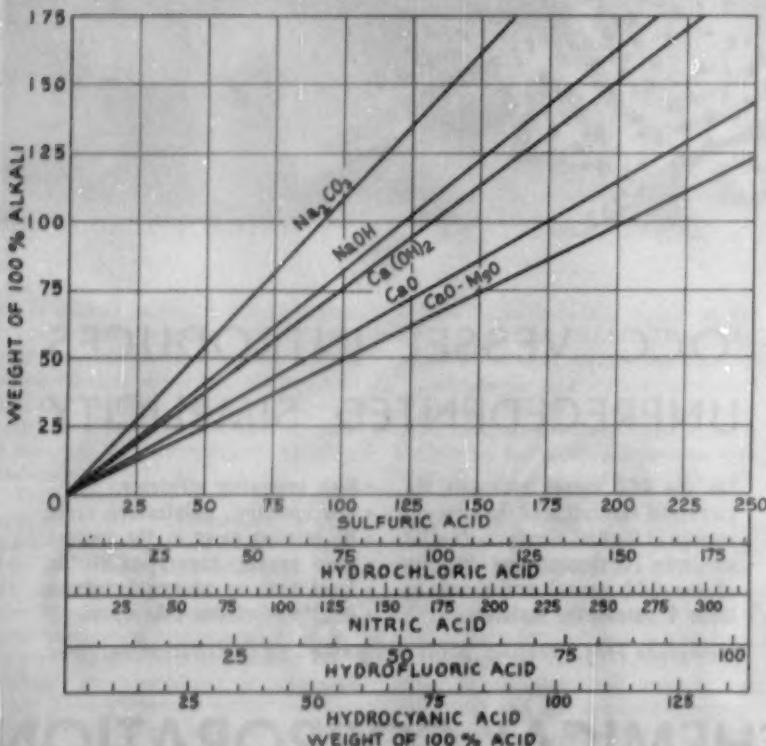
For the first time, all possible ways of handling and feeding lime in both dry and slurry forms were described with illustrations and evaluated so that the advantages and disadvantages of all types of equipment and processes are clearly revealed. Similar information was also included on lime slaking and sludge dewatering and disposal. This book has been a great boon to the actual and prospective lime consumers and the consulting sanitary engineers, who have designed the many postwar trade waste treatment plants. By pointing the way toward greater efficiency in using lime this book has undoubtedly influenced the use of lime in some cases where otherwise, biological, mechanical, or other chemical treatment processes would have been selected instead of lime. At best lime is difficult to handle; this book has greatly minimized these difficulties.

(2) Research on pickle liquor neutralization has resulted in several technical papers presented at American Chemical Society and Purdue Trade Waste meetings. These papers underscored the advantages of lime over limestone in greater neutralizing speed which results in far less detention time and, as a consequence, the treatment facilities can be much smaller, simpler, and less costly. The inability of limestone to precipitate the ferrous iron completely at the high pH levels necessary was discovered.

In addition, other studies contributed considerable "know how" on minimizing the sludge disposal problems created by lime neutralization. This investigation revealed that oxidation of the raw, untreated pickle liquor or the neutralized sludge (after lime neutralization) greatly improved the settling rate of the sludge and a final reduction in sludge volume. Direct oxidation of the neutralized sludge with air offered the most practical solution to this problem.

(3) In recent years William Parsons of Rutgers has concentrated his efforts on the after precipitation problem that follows lime neutralization of sulfuric acid waste waters. He developed a process for controlling after precipitation by crystal seeding the neutralized mixture with return sludge (calcium sulfate) or gypsum powder. Thus, the waste effluent following neutralization is greatly improved.

(4) Miscellaneous wastes were also experimented with in which lime was utilized as the principal reagent, either



Graph showing favorable position of lime products in contrast to other alkalies in neutralizing various acids. The graph was designed for use in determining the weight of alkalies required to neutralize a given weight of any of the acids indicated. As the graph is based upon theoretically pure acids and alkalies, appropriate correction should be made when applying this data.

alone or in conjunction with coagulants, like alum or iron salts. Technical papers were presented before appropriate technical societies on tomato canning wastes and cranberry wastes. Both of these research endeavors clearly revealed that if chemical treatment is necessary, then lime is unquestionably the most effective reagent to use. These studies, of course, were applicable to most other food and canning wastes.

An independent study on copper pyrophosphate plating wastes was also made in which lime was compared with caustic soda as the chemical reagent. Lime proved to be most economical, and this research revealed a process whereby 97 percent of the copper could be removed from the waste effluent at an estimated cost of 3½¢ per 1000 gal. of copper plating wastes. This research was published in an appropriate technical journal, "Wastes Engineering."

Unquestionably this Rutgers research has improved the utility of lime in this rapidly growing field of trade wastes. An annual new market for lime has developed since World War II in the field of acid waste neutralization — conservatively estimated at 125,000 to 150,000 tons per year. This tonnage should continue to grow steadily. Just what part of this new tonnage can be attributed to N.L.A. research is, of course, impossible to appraise — other than the above research has unquestionably lent impetus to this growing field. It is also significant that large current trade waste users of lime like duPont, Hercules Powder, Merck and others visited and consulted with Dr. Rudolfs and Rutgers University before developing their present trade waste treatment processes.

#### Purdue Oil Waste Research

In 1951 the National Lime Association established another fellowship on a different aspect of the trade waste problem at Purdue University under Prof. Don Bloodgood. Since Rutgers' work had been largely confined to acid neutralization, the Purdue program was established on the use of lime in flocculating oil (both petroleum and vegetable) wastes or in breaking oil emulsions. After some exploratory investigations into the use of lime and iron salts (usually ferrous sulfate) in flocculating and removing oil emulsions from petroleum waste waters, the research fellows stumbled onto the completely original idea of using excess quantities of lime and sulfuric acid as a means of recovering the more expensive chemical reagent, ferric sulfate, for reuse in the process. Experimentally this process has been

(Continued on page 123)

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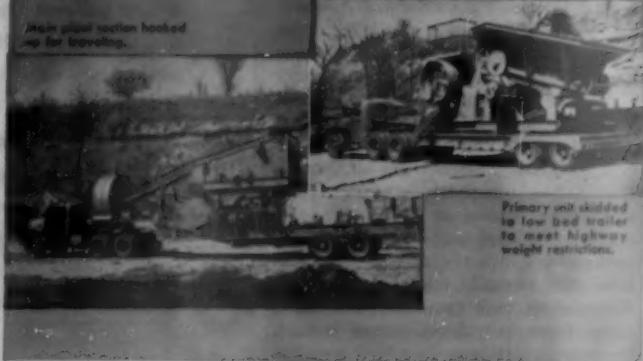
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highly successful, since 95 percent of the oil emulsion has been removed from the waste water consistently over ten different cycles with a loss of only about 25 percent of the original starting volume of ferric sulfate.

The development of this process is so recent that its future utilization by the petroleum and metal fabricating industries can only be conjectural at this point. However, it appears that it is the most economical and satisfactory process for breaking oil emulsions. The number of industrial establishments confronted with this problem both from waste disposal as well as manufacturing (processing) standpoint is approximately 1000. Consequently, it appears that in time numerous relatively small lime users will be created due to the adoption of this waste treatment process, aggregating a large total lime tonnage.

#### Lime Stabilization

After the Texas Highway Department had demonstrated that hydrated lime offered promise as a stabilizer on clayey soils shortly after World War II, the National Lime Association established a research fellowship at Purdue University to develop further information on this entirely new field for lime. Prof. K. B. Woods, one of the country's most eminent soils engineers, directed this research. In establishing this fellowship at this early date, the Association was really pioneering in a virgin field.

The first phase of this research was to experiment with lime on a wide range of soil types from all sections of the country. This study included 38 different soils from coarse, gravelly mixtures to the finest grained soils. Some of the conclusions of this study were:

(1) That the Texas Highway Department findings were correct. Lime did change the characteristics of Texas clay soils markedly — transforming them from sticky, unstable soils to coarse, friable base material.

(2) That the strange action of lime on the soil was not just physical; it was primarily a chemical (pozzolanic) reaction which caused the cementing action of lime with the clay particles.

(3) That lime increased the compressive strength of virtually all soils (at least, it did with the 38 different soils types).

(4) That the plasticity index of all high P.I. soils was invariably reduced, although in varying amounts.

(5) An optimum amount of lime could be determined for all soils. In many soils higher quantities of lime produced poorer results.

(6) That limestone flour was not nearly as effective as hydrated lime.

(7) That the stability of many of



Lime-stabilized secondary road under construction. Roads of this type require 100 to 200 tons of lime per mile of road

these soils (or base course materials) was greatly improved as measured by the California Bearing Ratio (CBR) triaxial testing method.

Other experimentation was conducted on the durability characteristics of lime-soil mixtures. Much of this experimentation was inconclusive, but it did prove that A.S.T.M. durability tests for soil-cement are inapplicable to lime.

This fellowship was terminated in 1954 and a new fellowship at Texas University was commenced on the same subject. The work at Texas has not progressed far enough for reporting, but it will consist more of a series of field projects in which varying per cents of lime will be used with varying soil types under different conditions. These road sections will be studied and compared with laboratory findings so that possibly more detailed recommendations on the use of lime can be made.

The results of this stabilization research have been presented to the Highway Research Board on several occasions. Unquestionably, it has contributed more technical information so that lime has slowly but steadily progressed in highway construction. This research has also created the indirect benefit of whetting the interest and curiosity of other soils engineers to experiment with lime in this field.

It is estimated now that the equivalent of about 750 miles or nearly 10 million sq. yds. of lime or lime-fly ash stabilized base have been built. This mileage has required about 100,000 tons of lime. An attractive tonnage to be sure, yet the "surface has only been scratched" on the limitless potentialities for lime in road construction. If only 10 percent of lime potentialities

can be exploited in the field, a new market in excess of 500,000 tons per year could develop. However, competition in this field is really rugged.

#### Concrete Products

For two consecutive years (1952-53) the National Lime Association sponsored research at Toledo Research Foundation under John Selden, on lime additions to autoclaved concrete products. This research was timely since users of concrete block have been increasingly critical of the delayed shrinkage of block in the wall. Preshrinking the block by means of autoclaving was an obvious solution to this problem. To this end the Army and the Housing and Home Finance Agency (H.H.F.A.) spent large sums of money on research to correct this problem caused by shrinkage cracks in concrete masonry. More rigid specifications on shrinkage have resulted on the use of concrete block on federal work in particular. Some of the results of the N.L.A. research showed that:

(1) When pozzolans of high activity, like certain types of fly ash and silica flour, were employed lime could be substituted entirely for portland cement and still produce a good block of adequate strength.

(2) The substantial savings in raw materials through the use of pozzolans with lime enables the block manufacture to produce a sounder product with less shrinkage and at the same time will compensate for the added cost of installing the expensive autoclave equipment.

(3) Siliceous fines are most reactive with lime in autoclaving and should be employed instead of fly ash when

(Continued on page 128)

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## Largest Cement Plant

(Continued from page 116)

steel shutters and the use, throughout, of grating stairways, landings and overhead operating floors. Ventilating fans are also used during hot weather.

## Electrical-Water Supply

Expansion of productive capacity culminating in the latest enlargement program necessitated other major changes in auxiliary mill operations. It became necessary to re-design the entire circulating and mill water source of supply, to increase the available supply of boiler feed water, to install an entirely new boiler feed water treatment system, to install larger capacity water and steam lines and to establish new load centers to handle the increased electrical load.

In the Fall of 1952, a new 12,500 k.w. Allis-Chalmers turbo-generator was installed in the powerhouse. This sixth unit is now operated with two of the more modern older units and the others are in standby service. The steam rate for the new unit is 13.0 lb. per kw.h., which is much less than for the oldest units and thereby permits more efficient use of steam. Electricity is generated at 4160 volts by all the turbo-generators with the exception of the oldest unit.

Peak electrical load is 28,000 kw. To handle the increased load, three new load centers with G.E. Limitamp controls have been established. One of 1000 kw.a. capacity was installed in the new finish grinding building, a second 1000 kw.a. unit for clinker grinding was installed adjoining the new scalehouse, and a 1500 kw.a. station is adjacent to the waste-heat boiler building.

A new system for circulating air through the powerhouse which draws air through cooling coils and maintains the area under slight pressure has provided increased comfort to operating and maintenance men.

Water supply was increased by installing three vertical axial flow pumps of 25,000 g.p.m. capacity each in the existing pumphouse, delivering into a 28,000 gal. storage tank in the basement of the new turbine building. This is the source of all condenser and mill water.

A new 1200 g.p.m. high pressure pump was installed to increase the boiler feed water supply, and new headers and lines to supply the four new boilers and up to four more future boilers. Also, a new line was run to the existing older boilers to relieve a serious pressure drop. New steam headers were necessary in the powerhouse for distribution to all turbines, so that steam pressures could be increased and efficiency improved.

An entirely new boiler feed water system, using the hot lime-Zeolite process of water softening was installed. It has a normal capacity of 728,000 lb. of raw water per hr. and a peak of 1,001,000 lb. per hr. It will deliver water down to almost zero hardness.

#### Credits—Personnel

General design for the entire project was accomplished by Huron's engineering staff in close cooperation with operating personnel. Huron personnel did all the concrete work. General contractor was McDowell Co., Inc., Cleveland, Ohio, which company has been contractor for all major construction at Alpena since 1947. McDowell did the engineering detail for all steel work, the erection of all structures and designed and built the clinker handling system.

General officers of Huron Portland Cement Co. are Emory M. Ford, chairman; Paul H. Townsend, president; H. Ripley Schemm, vice-president in charge of operations; John B. Ford, vice-president; Clarence L. Laude, vice-president in charge of sales; and William W. Crapo, secretary and assistant treasurer.

W. G. MacDonald is mill manager at Alpena; Herbert A. Browne is chief engineer at the plant; Osborn R. Archer is assistant mill manager; Elmer H. Evans, superintendent; and Albert C. Fowler, chief chemist. Arthur C. Dane is chief engineer at the company's headquarters in Detroit. Clinton P. Harris, now retired after many years as mill manager, is consulting engineer at Alpena.

#### Plans for Further Expansion

Huron's board of directors has approved projects which will add some 1,000,000 bbl. annual production in 1955 and another 2,000,000 bbl. in 1956.

Plans now under way will provide facilities to accomplish increased production from the present kilns. These consist of the redesign of the kiln firing system, involving conversion from unit to bin firing, and the installation of preheaters on one or more of the present kilns.

In addition, sufficient new kilns will be installed during the next 12 months to bring the overall capacity in 1956 to 12,000,000 bbl.

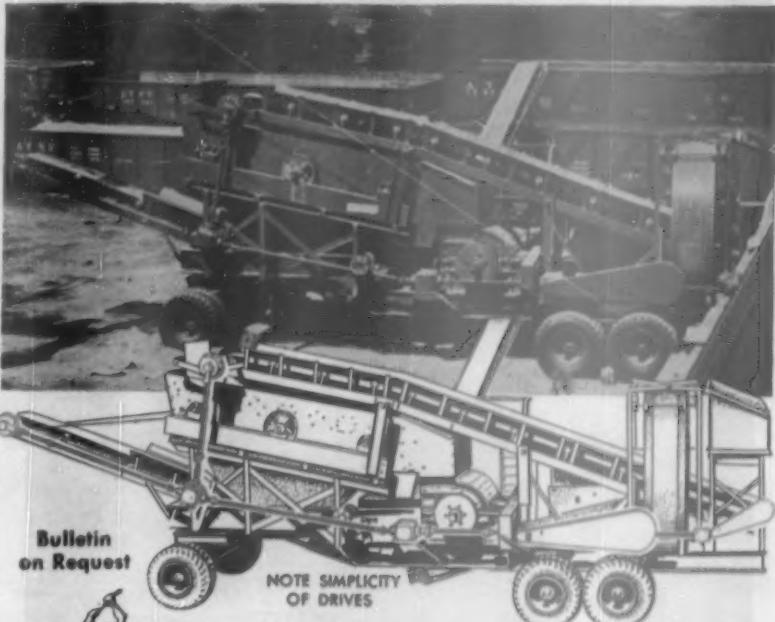
#### Vermiculite Patent

THE ZONOLITE Co., Chicago, Ill., has been granted a patent for the use of vermiculite as a fertilizer conditioner. It is said to prevent fertilizers from caking and hardening before and after bagging, and to keep the fertilizer free-flowing for ease of operation in spreaders.

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### Rocky's Notes

(Continued from page 69)

said to be about 10 times that of a petroleum grease in a motor bearing at 150 deg. C. (302 deg. F.).

Coatings or protective coverings are made with silicone resins, which are said to be heat resistant, water repellent, resistant to most aqueous chemical reagents and corrosive gases. Here evidently are possibilities for use in many lime and cement plants, where hot stack gases have to be handled. Such resins come in many forms; in some applications the film has to be heat treated or baked on. In some forms the application, it is claimed, can be made to provide "the ultimate in heat-resisting, pigmented coatings," surpassed only by inorganic enamels. This certainly suggests a much desired use for special concrete products such as bowls, bathtubs, swimming pools, etc. Since heat treatment is required, special equipment would be necessary.

Resin products are already more or less extensively used for water-repellent coatings for masonry and concrete. These are on the market under various trade names already familiar to products manufacturers. There are three types of these silicone products: (1) a volatile liquid applied to the surface, which upon evaporation leaves a thin film of silica ( $\text{SiO}_2$ ); (2) a partly condensed silicone, which will react with moisture on or in the wall and eventually forms a condensed film of a silicone rather than of silica; (3) a fully condensed resin which requires no reaction with water but sets with mere loss of the solvent.

In the foregoing we have touched only on some of the uses of silicones that may have some application to the industries that we are all familiar with. There are many other uses, and a reading of the whole text should suggest many possible new economies in these industries through uses of silicone products that only the operating man could clearly see. We trust we have also given enough of a review that the producer of silica sand will be able to discern a rosy future. For manufacture of silicones the silica will have to be the purest it is possible to obtain, so that the producer may have to go into methods of refinement, exceeding even those for sand used in the best grades of plate glass. But the cost of the raw material is but a small percentage of the cost of manufacturing silicones, so doubtless investment in special equipment and methods for preparing the silica will be amply justified.

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# Lime Research Program

(Continued from page 125)

maximum strength or high insulation value is desired.

(4) Although portland cement has an advantage over lime in density, lime-pozzolan has a corresponding advantage in yield and raw material cost for a given strength.

(5) In lightweight block where expanded slag aggregate is employed, lime and fly ash have given higher strengths than cement at less cost than ordinary cement block provide under normal curing conditions.

This market has attractive potential. Already some concrete products manufacturers are using lime as partial replacement for cement. The total tonnage of portland cement consumed by block manufacturers is estimated at at least 2,000,000 tons per year. If only 10 percent of the cement is replaced with lime, an eventual annual market of 200,000 tons of lime per year could conceivably develop. This is a creative lime market. Such tonnage can only be realized if the lime industry will promote it vigorously.

## Other Research

Other National Lime Association research during the past eight years has been of a more fundamental nature in which new tonnage possibilities are too remote for even conjecture. Such is the present program at M.I.T. under Prof. James Murray. Yet, this research which is necessarily undramatic and seemingly relatively unobjectionable is most important. Definite leads have been obtained to date from this research on how a lime manufacturer can improve the quality of his lime through different burning practices. Calcination and slaking tests have been made on each N.L.A. member's stone in such a way that only the individual manufacturer is acquainted with the results. This type of research is a matter of groping into the unknown which necessarily follows down

many blind alleys. However, more fundamental data on lime is sorely needed, and a properly balanced research program requires research of this type. Another N.L.A. research program was a four-year study (1946-50) at five agricultural experiment stations (Maryland, New Jersey, New York, Ohio, and Pennsylvania) on agricultural liming. The upshot of this research was the well-received N.L.A. booklet, "100 Questions and Answers on Liming Land," which many agronomists now regard as the "bible" on liming. A recent fellowship has just been established at Franklin Institute to evaluate the shear and bond strength of lime-cement mortars by new procedures.

Unquestionably, the new market possibilities for lime are tremendous. However, these markets can only be developed and exploited by diligent and continuing effort in which research plays the leading role. The rapidity and degree with which these new markets develop is largely dependent on the dollars spent by the association to this end. Unquestionably, if the current association expenditures for research were increased two- or threefold, the new lime tonnage that would be created would be proportionately larger than at present. However, for such an expanded research program to be a success the industry would have to augment its sales forces and show a willingness to add to its present productive capacities — which to date many companies have been disinclined to do.

One last intriguing research possibility for lime: why is it that the United States uses only about 28 lb. of quicklime as a flux to produce a ton of steel on an average basis whereas the steel industries of Great Britain, Belgium, France, and Germany use an average ranging from 100 to 150 lb. of lime per ton of ingot steel? There

are similar unanswered questions as this in other fields of nearly the same magnitude. If the lime industry ever decides to really "roll up its sleeves" and find out the answers to these questions, there is no prediction how far this industry can expand and progress.

## Technical Advances

(Continued from page 99)

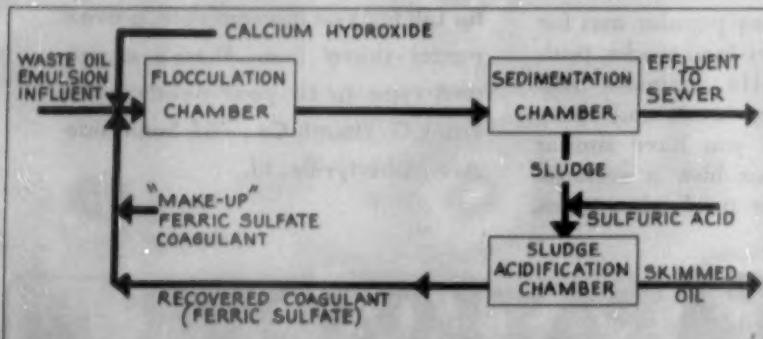
that some producers of sand who use heavy media, or contemplate using the process, will explore the possibility of producing their own magnetite. A few concentrating tables or spirals might recover enough "black sands" to supply their own needs at a very small cost. A few concentrating or shaking tables, or the spirals can fit into a sand flow-sheet without any extra labor and they are practically fool-proof in operation. A relatively small operation in the West that was recovering by tables a considerable amount of black sand but for another purpose was described in ROCK PRODUCTS, November, 1953, page 92.

Flotation in the industrial sand field still goes ahead. A new plant is in process of construction, or in operation in New Jersey. In California, ground was broken for a large glass sand operation, and at this plant clay will be an important by-product. The clay will go to an important ceramic concern, and the glass sand to a well known glass manufacturer. The process will involve flotation, liquid cyclones and the latest in beneficiation.

## Portable Screening-Crushing

During the year several "packaged" plants were placed into operation. We have applied the term "packaged" to a type of plant, large or small, wherein in the design and practically all the equipment was supplied by one manufacturer. Portable plants continue to hold an important place in the rock products industries. Many portable plants — so called — are actually portable plants, permanently mounted.

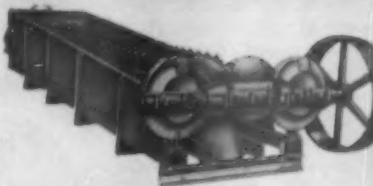
One such new plant, using mainly portable items had its primary, secondary, and final reduction sections with intermediate screens of the portable type. Two surge piles were involved. Sand recovery and loading bins were items usually considered of the permanent type. At another plant, practically all the equipment was of the permanent type, but the operators had most of the main items (truck loading bins, sand screws, etc.) worked over and a "yoke" or tongue, like an old fashioned wagon fixed to each item. In the event they wanted to move the units they could be lifted onto a trailer and the tongue chained to a truck and portability achieved. Washed sand is being prepared in portable units.



Flow diagram of new process developed by the National Lime Association on breaking oil emulsions with lime

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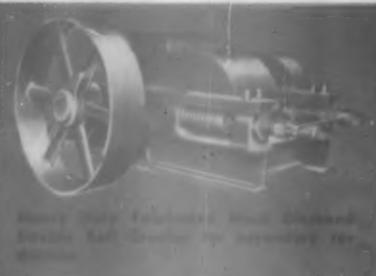
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**N.A.L.I. Convention Program**

CELEBRATING ITS TENTH ANNIVERSARY, the National Agricultural Lime-stone Institute will hold its 1955 annual convention in Washington, D. C., January 17 and 18 at the Statler Hotel.

President John M. Deely, Lee Lime Corp., Lee, Mass., will preside at the opening session on Monday morning which will include a movie, "Greener Pastures in North Carolina"; president's address of welcome; treasurer's report by Alvin R. Armburst; reports of committee chairmen; and executive secretary's report. Leonard S. Fry of Fry Coal & Stone Co., Mercersburg, Penn., will preside at the Greeting luncheon at which Robt. M. Koch, executive secretary, will give his address, "Ten Years of Organization—Where to Now?"

At the afternoon session, there will be a panel on promotion, "How Aglime Producers Can Wage War on 'Emil' Disease." W. D. Dillon, Dillon Stone Co., Columbus Junction, Iowa, will be the presiding chairman. Others on the program will be Chas. Coburn, Waukesha Lime & Stone Co., Waukesha, Wis., and W. F. Childs III, Harry T. Campbell Sons' Corp., Towson, Md.

The evening program will include cocktails at 6 p.m. followed by a buffet supper and dancing.

The Tuesday morning session will

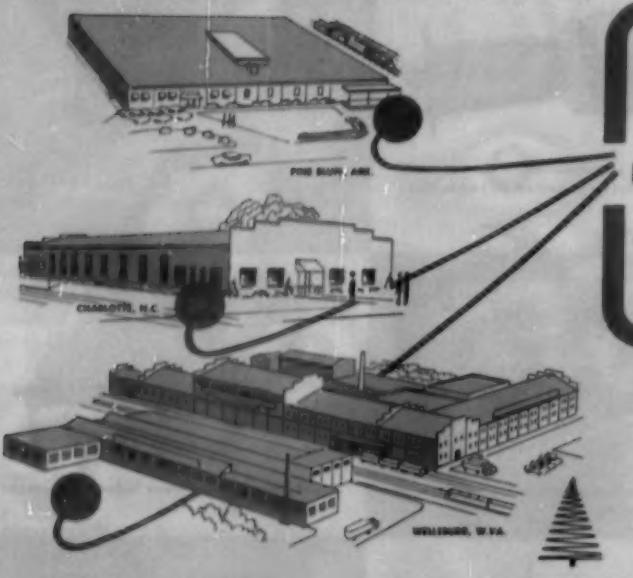
start with a movie, "Making the Most of a Miracle," by the American Food Council.

Following the movie, there will be a panel discussion on the agricultural conservation program. Robt. M. Koch, executive secretary of the association will be the presiding chairman, and the panel participants will be four of U.S.D.A.'s top administrators: Lewis I. Jones, coordinator, Grasslands Programs, Extension Service; H. Laurence Manwaring, deputy administrator for Production Adjustment; Fred G. Ritchie, acting administrator, Agricultural Conservation Program Service; and Donald A. Williams, administrator, Soil Conservation Service. An opportunity will be given for questions addressed to the panel from the floor.

Following the first panel discussion, there will be a second panel on percentage depletion. Earl L. Heckathorn, Stuntz-Yeoman Co., Delphix, Ind., will be presiding chairman. He will be assisted by Horace C. Krause, Columbia Quarry Co., St. Louis, Mo.; and John T. Sapienza, of the legal firm of Covington & Burling, Washington, D. C., association counsel. Questions will be invited from the floor.

First vice-president John H. Riddle, Riddle Quarries, Inc., Salina, Kan., will preside at the luncheon on Tues-

(Continued on page 159)



For Multi-Wall Bags, "Make It a Habit to Depend on Hammond"

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more, giving us, all told, 4 Erie Bins. We're pleased with their performance.

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# INFORMATION

TO HELP YOU MEET TODAY'S PROBLEMS AND TO MAKE PLANS FOR TOMORROW

You can obtain catalogs listed on these pages by merely checking and mailing the coupon below

1 **ADJUSTABLE SPEED EQUIPMENT** — Eaton Manufacturing Co., Dynematic Div., has released a 16-page bulletin, No. GE-2, describing the principle and use of Dynematic Eddy-Current adjustable speed equipment. Typical application photographs and torque curves are included.

2 **ARC WELDING** — Hobart Brothers Co. has released a 24-page booklet, Vol. XI, No. 3 of "Hobart Arc Welding News," containing photographs and articles on welding.

3 **BIN WEIGHING** — Minneapolis-Honeywell Regulator Co., Industrial Div., has issued Data Sheet No. 10.18-7, describing the use of Baldwin SR-4 load cells in conjunction with Electronic instruments for tank, bin and hopper weighing. Design considerations and tips on instrument selection are included.

4 **BITS** — Brunner & Lay, Inc., has issued Bulletin B-1, entitled "Tungsten Carbide Rock-Bits." Two charts illustrate the complete line of bits, and detailed recommendations are made for the use of each bit.

5 **BLENDING SYSTEM** — Richardson Scale Co. has issued a technical reference, No. 54D, describing and illustrating its high ratio, continuous blending system. A schematic diagram of the prills blending installation, outline of the operating sequence and illustrations of the weighing equipment and control panel are given.

6 **BULLDOZER CORNER ADAPTERS** — H & L Tooth Co. has released a catalog sheet, No. 454, describing and illustrating Bulldozer corner adapters with replaceable points. Teeth for shovels, clamshells, rippers, etc., are also listed.

7 **CALCIUM CHLORIDE** — Calcium Chloride Institute has issued Manual CM-1, a 40-page bulletin containing data on the use of calcium chloride in concrete, based on research and field investigations. Information is given on initial and final set, early strength, ultimate strength, curing, workability, density, etc. Charts are also given.

8 **CENTRIFUGAL PUMPS** — Worthington Corp. has published Bulletin W-395-B2, describing and illustrating self-priming centrifugal pumps, listing specifications, applications and sizes of various types. Data is presented on component parts, characteristics, and ranges of applications, and a chart of the pump models lists dimensions.

9 **CLUTCH** — Dodge Manufacturing Co. has announced Bulletin A-634, giving data on the Air-Grip clutch. A listing of features, operation details, and a cross-sectional drawing are given. Data on air control and release valves is also included.

10 **CONCRETE RELEASE AGENT** — Edick Laboratories has issued a sheet describing Edicote No. 103, an emulsion of waxes and oils to provide a protective film on metal surfaces exposed to concrete build-up. Various uses, advantages, application details, and storage requirements are included.

11 **COOLING SYSTEM MAINTENANCE** — Cummins Engine Co., Inc. has published a Service Bulletin, No. 19, giving suggestions on the care of the cooling system of an internal combustion engine. Cartoons are used throughout, and a maintenance check-off sheet is included.

12 **CYCLONES** — Equipment Engineers, Inc. has released Bulletin 121, illustrating four basic model cyclones and describing features of the molded pure gum replaceable lining and integral, two-stage cylindrical design. Classification data and specific applications of each model are included.

13 **DEEP HOLE PERCUSSION DRILLING** — Gardner-Denver Co. has published a booklet, No. DHPD-1, entitled "Deep Hole Percussion Drilling," which provides application data, actual job reports, and descriptions of the complete line of coordinated drilling equipment. Thirteen pages of original application drawings point out some of the varied uses for the deep hole percussion drilling method.

14 **DEWPOINT MEASUREMENT** — Minneapolis-Honeywell Regulator Co., Industrial Div., has published Data Sheet No. 10.5-1a, describing the Surface Combustion Corp.'s Dewpoint Recorder, including details about the multiple source type which automatically records dewpoints from six different sources in rapid succession.

15 **DIESEL ENGINES** — General Motors Corp., Detroit Diesel Engine Div., has announced Product Information Bulletin No. 11, on the Series "71" diesel engines. Included are features, descriptions and illustrations of parts, and engine speed-r.p.m. charts.

16 **DRAFT GAUGES** — The Hays Corp. has released Publication 54-1060-210, describing and illustrating diaphragm operated Vertical draft gauges. Various type mountings are also illustrated and explained.

17 **DUMP BODIES-HOISTS** — The Galion Allsteel Body Co. has brought out a four-page catalog describing Model 12N-5 dump bodies and Model 800T, 880 and 77353 hydraulic hoists. Cutaway views, line drawings and action photos are given, as well as construction features, mechanical details and specifications.

18 **DUST COLLECTOR** — American Air Filter Co., Inc. has released Bulletin 291, giving technical details on the AMERclose, dry centrifugal dust collector. Engineering drawings and a dimension table are included.

19 **ELECTRIC HOIST** — Coffing Hoist Co. has announced Bulletin CQ, describing and illustrating the Cable Quik-Lift electric hoist. Specifications, dimensions and line drawings are included.

20 **ELECTRIC STARTERS** — The Electric Controller and Manufacturing Co. has released Folder 1060, describing and illustrating its line of Air-Break electric starters for 2200-5000 volt motors. Sectional and complete views of each type are detailed along with reproductions of certificates of short circuit tests.

21 **ENGINE-GENERATOR SETS** — Westinghouse Air Brake Co., Le Rei Division has issued an eight-page bulletin on "Custom Built" engine-generator sets, describing and illustrating seven engine models. Application photos, installation drawings, and combined horsepower and kilowatt charts are included.

22 **ENGINES** — Willys Motors, Inc. has issued a six-page brochure announcing Power Giant power units, giving complete specifications of engines, standard equipment and housing. Horsepower, torque and fuel consumption figures are included.

23 **FEEDWATER CONTROL SYSTEMS** — The Hays Corp. has released Publication 54-1073-221, on one, two and three element feedwater control systems designed to meet the requirements of large, medium or small boilers.

24 **FLEXIBLE COUPLINGS** — Morse Chain Co. has released two data sheets, No. F841-84, describing and illustrating Morseflex industrial engine flywheel flexible coupling units. Specifications are listed for standard units that will fit eight models of Chrysler industrial engines and 29 models of Ford engines.

25 **FLOTATION MACHINES** — Western Machinery Co. has issued Bulletin L-1-F-1, describing and illustrating two Fagorogen laboratory flotation machines for research and commercial testing. Applications, characteristics and advantages of the units are discussed, and operating specifications and capacities are noted.

26 **GAS AND AIR FILTER** — Mechanical Industries, Inc. has issued Bulletin 4, detailing the Dorina Impingo filter for cleaning hot, wet and corrosive gases and air. Installation photographs, and engineering drawings of filter components and complete systems are given.

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**27 HAMMERMILLS** — American Pulverizer Co. has issued a bulletin giving the "inside" story of American hammermills, describing and illustrating construction features, and giving capacity ratings, dimensions and typical installation listings.

**28 HARD-FACING ALLOYS** — Wall Colmonoy Corp. has issued an engineering data sheet, No. 1A, describing special properties of Colmonoy hard-facing alloy No.'s 6, 8 and 4. Tables for use in estimating hard-facing alloy material requirements are also included.

**29 HEATING SYSTEM** — The Pneumo Co., Inc., has brought out a 24-page design manual for the split-system of heating, which outlines a way of combining circulating warm air and radiant panel heat. Typical layouts, charts, designing and controlling suggestions are given.

**30 HYDRAULIC HOISTS** — The Hell Co., Body and Hoist Div., has brought out two bulletins, No. BH-54114, on the Model 1715 hoist, and No. BH-54115, on the Model 1821 hoist. Construction features are illustrated and specifications are given.

**31 LIFT-TRUCK** — Hyster Co. has brought out Form 1287B, describing the Model RC-150, 15,000-lb. capacity lift truck. Typical application photographs and specifications are included.

**32 LIME SLAKERS** — Hardinge Co., Inc., has announced Bulletin 50, covering its lime-slakers. A description of the continuous mill-of-time process is given, and the general arrangement and dimensions of various size slaking systems are shown. Related process equipment are also described.

**33 LIQUID METERS** — Neptune Meter Co. has announced Bulletin 567, describing and illustrating its industrial liquid meters, including Auto-Stop and Auto-Switch quantity control meters, Print-O-Meters which provide printed tickets for each delivery or batch, and meters with simple direct reading registers.

**34 LUBRICATION SYSTEMS** — Lincoln Engineering Co., Industrial Div., has issued a brochure No. 806, describing and illustrating its automatic power-drive, centralized lubrication systems. Installation diagrams are included.

**35 MANGANESE STEEL CHAIN** — Taylor-Wharton Iron and Steel Co. has issued a bulletin describing the various types of Tisco manganese steel chain for working conditions of impact and abrasion. Photographs of each chain type are accompanied with detailed drawings and tables giving specifications.

**36 MATERIALS HANDLING** — Caterpillar Tractor Co. has released Form D473, illustrating and explaining the use of Cat wheel and track-type machines for stockpiling, storing and transporting. A section on Caterpillar diesel engines being used in shovels and cranes is also given.

**37 OVERHEAD BRIDGE CRANES** — The Michigan Crane & Conveyor Corp. has announced Bulletin 154, describing a line of overhead bridge cranes. General specifications and application data are given covering single girder, double girder, and box girder cranes.

**38 PNEUMATIC CONTROLLERS** — Minneapolis-Honeywell Regulator Co., Industrial Division, has released a specification sheet, No. 163-1, listing complete specifications for "Electro-K Circular Chart Pneumatic Controllers," and furnishing an up-to-date listing of the available control forms.

**39 PNEUMATIC CONVEYING** — Conair has announced Bulletin 105, describing and illustrating pneumatic conveying systems. Typical installations and operations are shown by means of engineering drawings, and a list of various materials handled by the system is given.

**40 POWER EQUIPMENT** — The Ogle Co. has issued Bulletin 10051-D, illustrating and describing its complete line of Fluid Power pumps, motors, transmissions, cylinders and valves. Also included are specification tables.

**41 QUALITY CONTROL** — Drago Products, Inc., has released an eight-page brochure describing the application of the Viscometer to both laboratory and plant process and quality control, designed to give specific values for rheological characteristics. Illustrations are also included.

**42 RECEIVER RECORDER** — Bailey Motor Co. has announced a 12-page bulletin, No. E12-5, illustrating and describing the Bailey Recorder, a receiver recorder for pneumatic and electric transmission systems. Application, operation, engineering and ordering specifications are included.

**43 ROLLER BEARING** — Railway Bearing Co. has introduced Catalog TR-854-DC, describing the Tru-Roll line of cylindrical roller bearings. Types, sizes, dimensions and load ratings are given, and a formula for load ratings is included.

**44 SCALPING-CRUSHING PLANT** — Smith Engineering Works has published Bulletin 288, describing and illustrating the Telemith single pass scalping and crushing plant. Dimensions, specifications, and a diagram showing operational features are included.

**45 SERVICE EQUIPMENT** — Caterpillar Tractor Co. has issued Form D484, entitled "Protection For Your Profit," on service equipment, preventive maintenance practices, and methods that may be utilized to speed up emergency field service.

**46 STRAPPING** — A. J. Gerrard & Co. has issued a six-page brochure describing and illustrating its line of Bulkbind heavy-duty strapping, strapping tools and accessories. Specifications are given.

**47 TELESCOPIC HOISTS** — The Galion All-steel Body Co. has announced Catalog LL-103, describing and illustrating Duo-scoopic hoists, Models 55381 and 66381. Construction details, design features, action photos, line drawings of the hoist, cutaway views of the hoist cylinder and hydraulic pump, and condensed specifications are included.

**48 TOTALLY-ENCLOSED MOTORS** — U. S. Electrical Motors, Inc., has announced Form F1784-50M, a full-color bulletin describing and illustrating totally-enclosed and explosion-proof motors. A cutaway illustration points out design features, and typical installations are pictured.

**49 TRACTOR** — LeTourneau-Westinghouse Co. has published a 28-page folder, Form 54-605-7, describing and illustrating features of the 208-hp. Tournatractor. Typical application photographs, attachment details, cut-away drawings, and a list of advantages are included.

**50 TRANSPORT BODY** — Beughman Manufacturing Co. has brought out Bulletin A-399, describing the "Bulkmobile" transport body. Construction features, operation data and discharge accessories are also included.

**51 VALVES** — Leden Manufacturing Co. has brought out Bulletin 1010, covering a complete line of standard four-way hand, foot, power and solenoid operated valves. Dimensions, weights, application diagrams, circuit diagrams, parts list and accessories are also included.

**52 VIBRATING SCREENS** — Doister Machine Co. has released Bulletin 56, describing and illustrating the Type UP horizontal vibrating screens, designed specially for asphalt plants. Schematic diagrams are included.

**53 WELDERS** — Air Reduction Sales Co. has released Bulletin ADC 719, giving specifications and features of Alco "Bumblite" a-c welders, N.E.M.A. rated 300, 400, and 500 amperes models.

**54 WIRE ROPE** — Bergan Wire Rope Co. has issued a folder entitled "Wire Rope Data Sheet," describing the types of "Specified" wire rope for various mining applications. Cross-sectional diagrams of the wire ropes are included, with technical data on maximum breaking strengths, applicable above diameters, and special characteristics.

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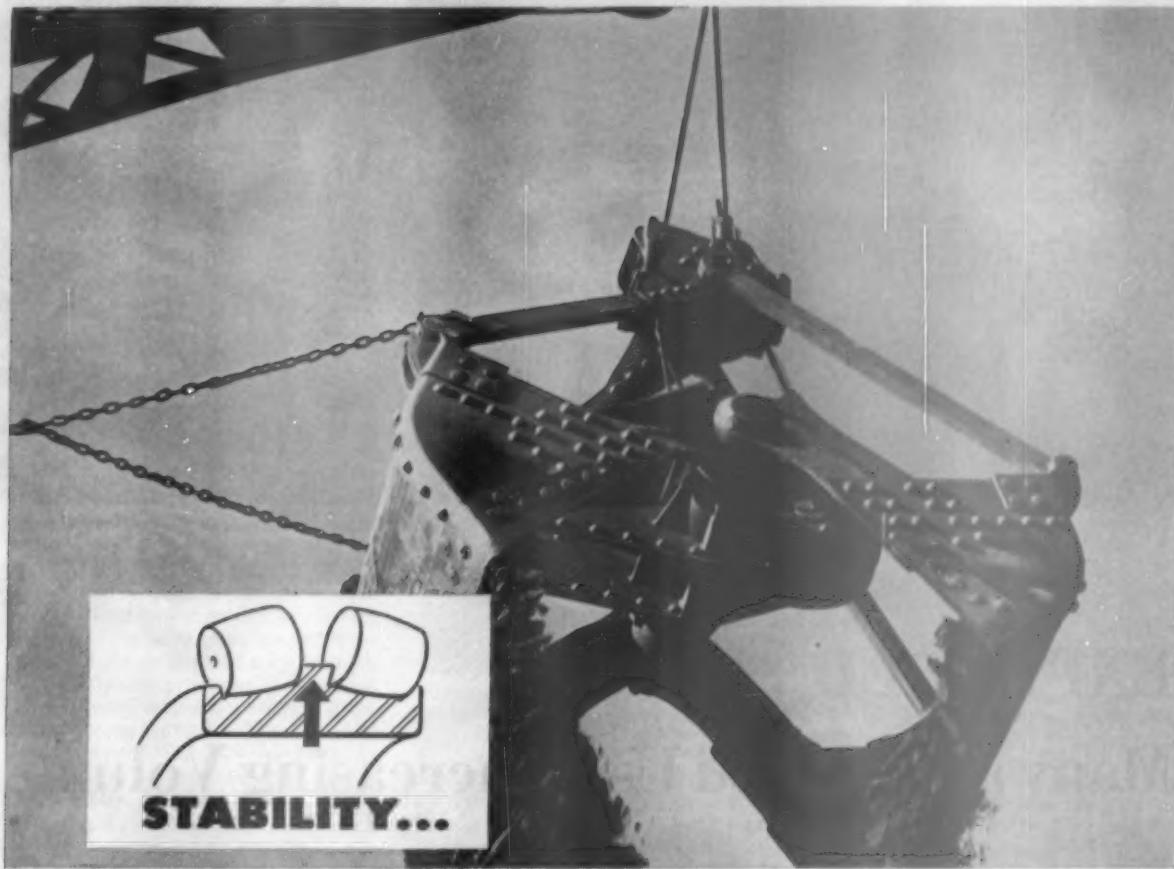
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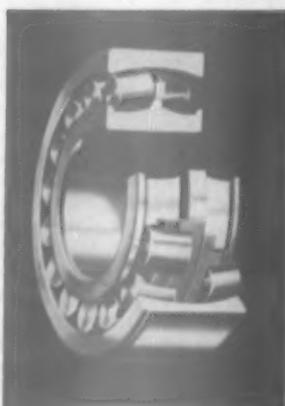
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**Expanded shale and concrete products plant** of Smithwick Concrete Products, Portland, Ore., with expanded shale plant in background. Each of the four silos has a capacity of 600 cu. yd. Silo at far right is for storage of crushed raw shale, the 100-ft. rotary kiln is immediately to the left of silo, center silo holds finished clinker, and the two silos to the left are for storing finished and crushed aggregate ready for shipment by rail or truck. The 50-ft. rotary cooler is not visible.

## EXPANDED SHALE

### Many and Varied Uses Increasing Volume

FROM CONCRETE MASONRY UNITS to ocean-going ships; from burial vaults to bridges and skyscrapers — this illustrates the versatility of the lightweight building material known throughout the construction world as expanded shale concrete.

Expanded shale, because of its inherent physical properties and characteristics, promises to open up new and greater fields in concrete construction. Due to one or more of its properties, it is coming into increasing and more widespread use. Proof of this is shown by the myriad variety of uses of the material; including lightweight concrete masonry units; tilt-up wall panels, multiple story buildings; precast roof and floor slabs; piers and superstructures of bridges, and decks; precast bridge members, culverts and guard rail posts; ships and barges; prestressed and post-stressed concrete; beams and girders; soil-less plant culture; terrazzo work; guniting; jet plane runways and aprons; refractory purposes; roofing tile; loose insulating fill; laundry tubs and burial vaults; plaster and stucco aggregate.

Expanded shale is a processed light-

weight aggregate produced by expansion and vesiculation under careful scientific control. It is produced from raw shale, slates or clays having suitable characteristics and at kiln temperatures of from 1900 to 2200 deg. F. Gases formed within the shale thus expand, forming myriads of tiny air cells within the mass, which are retained upon cooling and solidification. The resultant product is therefore made up of a highly cellular aggregate of great structural strength, each cell being surrounded by a hard, vitreous, waterproof membrane.

Expanded shale has been recognized by the building industry as a high grade building material for more than a third of a century. The process was first perfected at Kansas City in 1917 by Stephen J. Hayde, a chemist, who found that by heating certain shales, clays and slates to incipient fusion he was able to develop an extremely lightweight aggregate of high structural strength and insulation value.

These characteristics, plus its thermal, acoustical and refractory properties and chemical inertness, attracted the favorable attention of the construction industry wherever it was used. Since that date, demand for the material has grown to the point that

it is used throughout the United States and Canada.

It is estimated that the 33 rotary kiln plants operating in 20 states and in two provinces of Canada produced approximately 2,250,000 cu. yd. of expanded shale aggregate during 1954.

#### Plant Investment Large

Lest anyone gain the impression that the production of expanded shale is simplicity itself, it should be pointed out that by no means do all shales, clays and slates possess the exact chemical characteristics to assure satisfactory results such as floating, inertness and high structural strengths. The production of expanded shale is an exacting process all the way, from raw materials to the finished product.

The capital required to construct an expanded shale plant is substantial, usually running well over \$1000 per cubic yard of daily capacity. As existing plants are able to supply the present needs of most areas in the United States and Canada, there is little likelihood that there will be a great boom in the construction of new plants. Rather, the plants already established will enlarge their capacities by adding additional kilns and other necessary plant equipment as demands justify.

\*Past president, Expanded Shale Institute, and president of Smithwick Concrete Products, Portland, Ore.

\* Myriad uses include lightweight concrete masonry units; tilt-up wall panels; multiple story buildings; precast roof and floor slabs; decks, piers and superstructures of bridges; precast bridge members, beams and girders; jet plane runways and aprons; refractory purposes; soil-less plant culture and many others

By S. CARL SMITHWICK\*

During the past decade, after expanded shale aggregate had been known to the construction industry for about 25 years, a number of new uses were developed which brought added incentive for production. Bridge engineers began to value the combination of light weight and great strength of the concrete produced by expanded shale. Today they are specifying it for not only bridge decks but for piers and superstructures. Its resistance to abrasion is thought to be equal to that of ordinary concrete with the result that most present day lightweight bridge decks no longer specify an additional wearing surface.

The 35 percent savings in weight and the excellent thermal properties of expanded shale concrete are mainly responsible for its widespread use. Another contributing factor toward this trend in the present day tendency to do more in the factory and less on the actual building site.

#### Lightweight Masonry Units

The increasing demand for lightweight masonry units by the building industry in face of the increasing dearth of cinders and other lightweight aggregates has tremendously increased the use in this field of expanded shale until this provides the largest single market for its use. It is ideally suited for this purpose due to the relatively insignificant shrinkage factor; the greater yield of block per sack of cement, with little difficulty of meeting specifications for load bearing masonry units; its comparatively high insulating qualities and a reduction in weight below the sand and gravel block by 40 percent.

#### Bridge Construction

The use of expanded shale as reinforced concrete aggregate has an important place in the design and con-



**Tacoma Narrows bridge** constructed in 1950, the third longest suspension bridge in the world, makes use of expanded shale concrete for its entire deck. This resulted in a saving of 4,120,000 lb. in floor weight at a cost saving amounting to \$320,000

struction of bridges, especially those requiring long span structures. It effects a substantial economy in cantilever and suspension work due to the lighter weight of floor slabs. All parts of the structure are materially reduced, extending throughout the superstructure to the foundations because of the marked reduction of dead load.

From 1922 to 1931 about a dozen bridges were built using expanded shale concrete in decks in Alabama, California, Virginia, Pennsylvania, Mis-

souri and Canada. Their excellent performance inspired other bridge engineers to design with the same material, with the result that today there have been many structures of this type built throughout the country, with several major bridges under construction as this is written.

Several successful and outstanding examples of such bridges on the West Coast have given excellent service with practically no maintenance cost and with noteworthy savings in first costs. Perhaps the most outstanding is that



**Workmen** finishing the light weight deck of the Tacoma Narrows bridge



**Republic National Bank of Dallas, Texas,** dedicated early in December, utilized expanded shale concrete for all structural concrete and fill. Towering 600 ft. high, it has a total area in floor space of 760,-109 sq. ft.

of the San Francisco-Oakland Bay bridge which was paved with expanded shale concrete and which bears as heavy traffic as any other bridge in the country. This bridge floor has been in service for 17 years with no signs of failure nor deterioration.

The Tacoma Narrows bridge near Tacoma, Wash., which has a bridge floor of expanded shale concrete, has been under extremely heavy traffic for the past four years with no maintenance necessary and with all indications that no maintenance will be required for many years. The Eleventh Street bridge in Tacoma, which daily

carries a traffic of some 35,000 automobiles and trucks, and built in 1942 with no wearing surface other than the expanded shale concrete itself, still shows the original brush marks of the finishers on the surface.

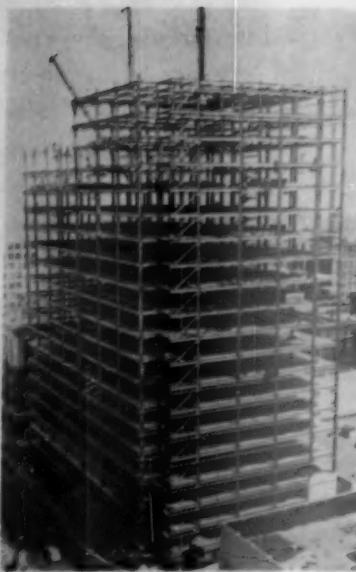
The two most recent examples of expanded shale concrete bridge floors in the Pacific Northwest are the two interstate bridges spanning the Columbia River, one at The Dalles, Ore., now under construction.

#### **Ships of Lightweight Concrete**

During World War II there were 104 ocean-going ships and barges built of lightweight concrete. Some 20 of these ships were built in San Francisco. The specifications were extremely rigid, requiring that no test cylinder from any pour should fall below 5000 p.s.i. in 28 days. Extremely high hydrostatic tests exceeding 18 lb. per sq. in. were required on all 4-in. and 5-in. shell walls for 48-hr. periods. All tests without exception were successfully met.

The long-time performance of expanded shale concrete in salt water, which has been a matter of deep concern to bridge engineers and others designing structures along our sea coasts, was dramatically demonstrated by a recent thorough investigation of the performance of the concrete in the S. S. Selma, built in 1919 of expanded shale concrete, a tanker of 7500 gross tons, which had been wallowing in the storms and tides of Galveston Bay for a third of a century.

The Expanded Shale Institute, in seeking absolute evidence that expanded shale concrete would resist the action of salt air and sea water, investigated the history of this ship and retained independent technical labora-

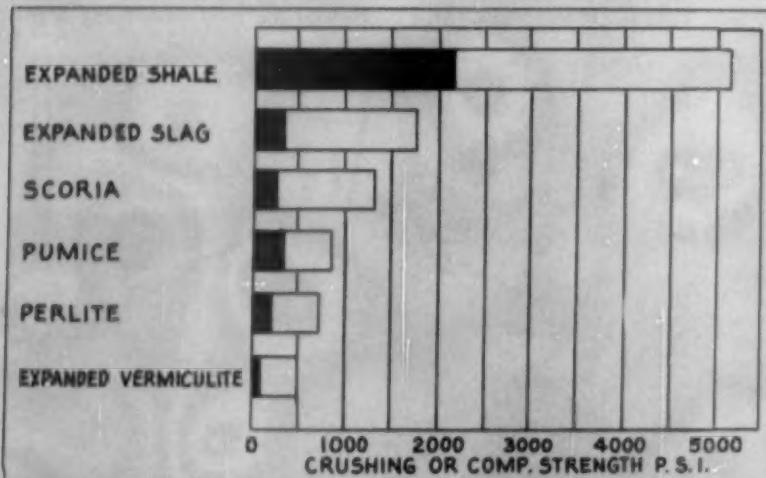


**The 23-story Fulton National Bank Building, Atlanta, Ga., now under construction, will use expanded shale concrete to reduce weight by 5000 tons**

tories to minutely study the condition of the concrete; its strength, and whether or not the reinforcing steel had been adversely affected. The results of these exhaustive tests were indeed enlightening and heartening, for it was found that the concrete had doubled in strength; the reinforcing steel was in excellent condition although the cover in some instances was not more than  $\frac{1}{8}$  in. thick; at a depth of about  $\frac{1}{4}$ -in. the concrete was dry, with practically no discoloration; specimens taken from a section of the hull alternately exposed to sea water and salt air showed no deterioration; the elastic modulus tests averaged 3.05 million p.s.i. with compressive strengths averaging 11,000 p.s.i. A complete report of this investigation by Cedric Willson, Chairman of the Technical Problems Committee of the Institute, has been prepared and is available to those interested.

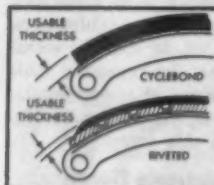
#### **Structural Uses in Buildings**

The increase in the use of expanded shale in multiple story buildings, principally because of its lighter weight and higher insulating values and fire resistance during the past 10 years, has been unprecedented. By decreasing the dead load of buildings it results in savings in the structural members, in reinforcing steel and in foundations. Among the larger structures where lightweight concrete has been successfully employed are the mammoth new Statler Hotel in Los Angeles where some 50,000 cu. yd. of expanded shale concrete were used, resulting in a reduction of dead weight of the



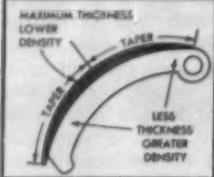
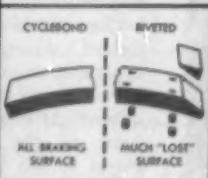
**Comparison of crushing strength of aggregate to compressive strengths of concrete** from tests conducted by the National Bureau of Standards. The solid black denotes the aggregate average strength for 1-in. compaction; the white area indicates the concrete coverage of 28-day strengths for five and seven-bag mixes.

**Another typical example of Dodge truck's extra-value engineering**



**More usable thickness.**  
Dodge truck Cyclebond brake linings can be used virtually through their full thickness. This gives the linings many thousands of miles of added life. Riveted linings should be worn only to rivet heads.

**More usable surface.**  
Every square inch of Cyclebond lining area is braking surface. Riveted linings, because of rivet holes and mitered ends, have up to 10% less braking surface.



**Tapered for easy stops.**  
Cyclebond lining is more tightly compressed at ends, gives a gradual taper. Thick center of lining makes first contact...increased pressure brings the ends into contact. Braking is smooth, even.

## **Why you go more miles before relining with Dodge truck brakes!**

You can be sure of lower brake maintenance, more miles before relining, with Dodge truck brakes and famous Dodge truck Cyclebond linings. And that's in addition to the quick, positive stops, the smooth action, for which Dodge truck brakes are famous.

Long-lasting, reliable brakes are just one example of the extra-value engineering that means more for your money when you buy...more money saved over the life of your truck. Get the facts on how extra-value engineering saves you money; see your dependable Dodge Truck dealer.

**DODGE "Job-Rated" TRUCKS**  
A PRODUCT OF CHRYSLER CORPORATION

structure by 37,000 tons and savings in cost and weight of steel of 15 percent; the 40-story Republic National Bank Building of Dallas, Texas, which has a total floor area of 760,109 sq. ft.; the Statler Hotel, also of Dallas, with savings in weight over ordinary concrete of 29,000,000 lb. in addition to a substantial saving in reinforcing steel; the 23-story Fulton National Bank Building of Atlanta, Georgia, where 6600 cu. yd. of expanded shale concrete were used with a reduction in dead load of 10,000,000 lb; the 14-story general hospital for the University of Oregon Medical School at Portland, Oregon, with a direct reduction in building dead weight of 3,186,000 lb. and which, incidentally, simplified an otherwise complex foundation problem. Another interesting example of the solution by expanded shale of an otherwise insurmountable building problem is that of the Halle Bros. department store of Cleveland, Ohio, where the owners decided they needed a 10-story annex but with soil bearing tests disclosing the disheartening news that the foundations could not be kept within their property lines. The dilemma was happily solved by the use of expanded shale concrete with a resulting reduction in total column loads of 8000 tons. Expanded shale was used for structural floors and for fireproofing steel throughout the entire building.

#### Tilt-up Panels of Expanded Shale

Tilt-up panels, whereby site-precast panels are formed on a flat base, then swung into position as wall sections, are well known to builders. However, the particularly advantageous use of a combination of expanded shale concrete and lightweight masonry units for tilt-up jobs is of interest.

In Spokane, Washington, an insurance company salvage building to be constructed required the utmost insulation plus positive waterproofing to allow salvaged materials to be washed inside. Expanded shale, because of its inherent properties of insulation, was considered and its added values of fire safety, structural strength and light weight convinced the architects and owners of its desirability. The construction of the walls to be raised consisted of a combination of lightweight monolithic concrete and soffit type block, in which the block units were assembled on the floor slab, then topped with a 2½-in. thick expanded shale concrete and troweled to a smooth finish.

This method did not require mortar joints, the soffit block being set tight against one another. For this reason, to assure a waterproof wall, the monolithic concrete was faced inside to withstand continuous hose streams

used in washing down salvaged materials.

In summary, the clients received for their money 14-in. thick walls with an insulating value ("u" factor) of 0.164; a waterproof, weatherproof, fireproof and crackproof wall without expansion joints and erected in a fraction of the time required for more conventional types. This is believed to be the first structure built of a combination tilt-up and masonry, but its success will undoubtedly inspire others to do likewise.

#### Precast — Prestressed Applications

Perhaps the most promising future field of expanded shale concrete is in its precast and prestressed uses. As its adaptability for these purposes has become better known there has been a tremendous increase in demand for the material in precast roof and floor panels, lintels, joists, sills, coping, precast bridge girders, facia members, stadiums, small railroad and highway structures and as monolithic concrete in roofs.

In Prairie Village, Kan., near Kansas City, stands a small foot bridge which in itself would not be remarkable except that it was, at the time of installation, America's longest prestressed lightweight beam of expanded shale concrete. This bridge, fabricated by the Carter-Waters Corporation in Kansas City, has a span 52 ft. long. Delivery was made on an ordinary pole truck to the jobsite, travel and placement being accomplished in just 45 min. The bridge weighed in at 22,000 lb. as compared to 31,000 lb. for the same structure in heavy concrete.

Now in service in Southern California is an unusual pitched-plate roof structure designed by Architect Gene

Verge for the St. Cornelius parish in Lakewood, near Long Beach.

The pitched-plate roof structure springs from a level 21 ft. 6 in. above the floor, pitched at a slope of 3:12. The concrete slabs are 5 in. thick and have a clear transverse span of 44 ft. 7 in.

Material for the high roof is expanded shale concrete, having a design density of 95 lb. per cu. ft., and a 28-day strength of 3000 p.s.i. The transverse (slab) reinforcing is of conventional type, designed and placed in accordance with the A.C.I. and Uniform Building Code requirements. However, the plate reinforcing is not conventional, but consists of high strength prestressed wires.

Early in the design it was evident that a significant saving might be made if the plate was reinforced with prestressed wires rather than with conventional reinforcing steel.

It is inevitable that the advent of expanded shale concrete will not only greatly enlarge existing markets for concrete but will create many new markets. The profound impact this will have on the concrete industry as a whole promises to be indeed considerable.

For example, it will stimulate the demand for cement; it will create new markets in the many fields in precast concrete uses and enlarge existing ones; suppliers of equipment for the construction and maintenance of expanded shale plants will find a greatly increased demand for such items as rotary kilns and coolers, gas-, oil- and coal-fired burners, refractory brick, electronic equipment, dust collectors, storage silos, conveyors, elevators, crushers, and so on. In short, it seems safe to predict that the expanded shale industry is on the eve of as spectacular a growth as occurred in the cement industry early in this century.

#### Ready-Mixed Concrete Plants

One matter which has been a subject of concern among producers of expanded shale, and which has had a stymieing effect on the greater use of lightweight concrete is the inability of some of the ready-mixed concrete plants to mix the material during the course of normal operations. This is mainly due to their lack of storage and bin space. This, of course, results in an abnormally high price for lightweight concrete, usually considerably higher than the difference between the costs of the two types of aggregate. However, some of the ready-mixed concrete plants have already equipped themselves with additional bins, conveyors, etc., and it is expected, or at least hoped, that many more plants will do likewise. If so, this will remove



Typical of the 104 ships built of expanded shale concrete during World War II is the Concrete No. 1 being launched in San Francisco

(Continued on page 155)

# HOW GREAT LAKES CARBON CORPORATION



## "QUENCHES ITS COKE" with a Plymouth Locomotive

"Quenching coke" is a fascinating step in the production of high quality foundry coke. Red hot coke is pushed out of the ovens into the steel quencher car. The car is then run beneath the quencher tower and water is sprayed on the glowing coke, making a spectacular steam cloud.

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## PLYMOUTH® TORQOMOTIVES

Torqomotive Drive:—Plymouth transmission with hydraulic torque converter.



Airplane view of Calaveras Cement Co., San Andreas, Calif., after new 11 ft. 3 in. by 360-ft. kiln had been added

## CEMENT Manufacturers Plan Record Expenditures for Expansion

By BROR NORDBERG

• Year-end announcements indicate much greater plant building activity than summarized in this forecast

A SUMMARY OF REPLIES received from portland cement manufacturers in answer to our year-end letter seeking comments on business conditions, indicates that the industry shipped approximately 269 million barrels of cement in 1954. This establishes an all-time record, and indications are that shipments in 1955 may increase by an additional 5 percent to a level of approximately 280 million barrels.

Increases in shipments for 1954 as compared to 1953 were in the range of 2 or 3 percent up to 10 percent (the total increase was 9 million barrels) and the larger increases reported were for the large concerns with multiple plants. In only one instance was a reduction reported for 1954 and that was in the northern California area. Plant expansion in 1954 increased productive capacity by 7 percent for the nation. Seventy percent of reporting companies estimated that shipments would increase in 1955. Twenty percent estimated that their shipments would equal 1954 levels and the balance predicted reductions. In weighting the returns according to sizes of companies reporting and relative ca-

pacities, it appears that the net average points to a five percent increase for 1955. Other sources believe the increase may be 7 percent or more. A number of companies had considerably higher backlog of orders on the books at year end than a year ago. Reductions will be restricted to the Pacific Northwest and northern California.

Our summary is based on replies from top executives representing 70 percent of the productive capacity of the industry and comprising 67 percent of the plants. We hereby express our thanks for a generous response that is truly representative of industry thinking.

Our letter requested comments on the volume of business in 1955, the comparative outlook for 1955 and significant changes in market distribution; plans for plant rehabilitation and expansion; cement shortages and the extent of freight absorption; the prospects for increased production of slag portland cement; and the principal handicaps to doing business.

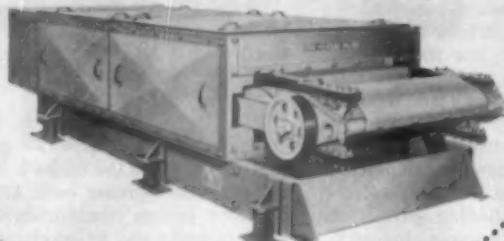
We also requested comment on financial aspects of the growth of the

industry, along the lines covered in an extremely informative paper presented by Joseph S. Young, president of Lehigh Portland Cement Co. before a meeting of the New York Society of Security Analysts. In that presentation, Mr. Young detailed the growth of his company, the future requirements in expansion and the complications involved in the financing of replacement and expansion. The problems, as presented, apply to all cement manufacturers and there was almost universal endorsement of his presentation of the problem, by all manufacturers.

### Business Conditions

Volume of business in 1954 was at a high level throughout the nation, with the only weak spot in northern California where there was a decline of 7 percent in shipments. In that area there has been a definite return to a buyers' market for cement with considerable freight absorption due principally to two factors. One is the influx of cement from southern California mills with their greatly enlarged capacities. According to a California manufacturer, Japanese cement has

# Prominent Asphalt Plant Manufacturer Specifies SYMONS® TYPE F HORIZONTAL VIBRATING SCREENS

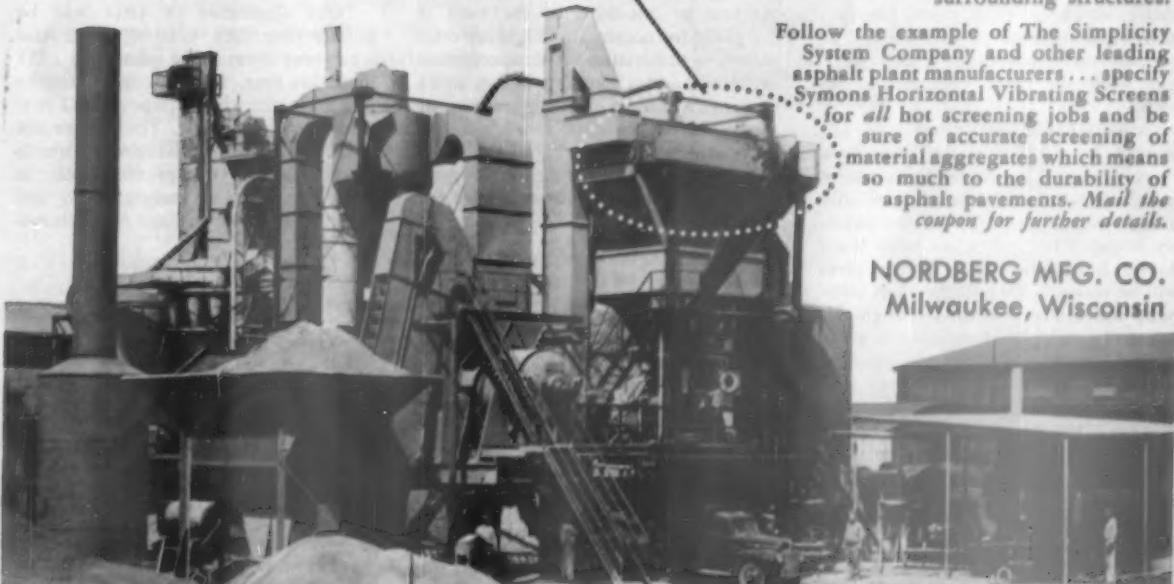


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replaced U. S. cement in the Philippines and German cement is taking orders away from California mills in the South Pacific. It is feared that foreign competition will increase. That threat is not exclusive to the west coast, for imports of Belgium cement into eastern ports are now becoming substantial and orders are being actively solicited among ready-mixed concrete and concrete products producers.

Some of the eastern cement manufacturers shipped less cement in 1954 than in 1953 only because of the two months' strike in Lehigh Valley and Hudson River plants. This strike and the shortage of cement in the East reflected to the advantage of mills outside of the area. For example, there was lack of highway construction in the Pittsburgh, Penn., area but mills in that general area were able to equal or exceed 1953 shipments, nevertheless, by shipping out-of-area cement into the east and by supplying cement for turnpike construction in Ohio and West Virginia. Such shipments are expected to bolster volume for these companies in 1955.

A number of companies stated simply that they were able to ship to capacity which, in most cases, resulted in a slight increase in volume due to stepped up efficiencies, where there had been no plant enlargement as such.

Considerable optimism was expressed for 1955 and the immediate years ahead. The more conservative spoke in terms of shipments of 300 million barrels annually for the industry within a few years but some companies believe a much higher level will be reached. One single-plant company stated that it is having engineering studies and market analyses made with a view to stepping up capacity by 50 percent. Another company with multiple plants has started expansion that will involve the expenditure of \$10 million within the next two years and which will lead to a 35-40 percent expansion over a 5-year period.

Joseph S. Young, in his paper covered the outlook in the following:

"There is every reason to believe that the demand for cement will continue to climb for some years to come. The United States is a growing nation. By 1970 the population should be 190 million. Today the consumption of cement is approximately 1.6 barrels per capita. On this basis, and in view of the probability of a further increase in the per capita use of cement, shipments might within the next fifteen years exceed 300 million barrels per year. There is also another way of estimating future shipments. The average increase in industry shipments over the past thirty years has been

about four million barrels per year. Assuming this average increase could safely be projected for another 15-year period, the estimate for 1970 would be 320 million barrels, an increase of 20 percent."

He further said:

"Because of the public clamor for a well-integrated national highway system and because of the probability of a continuation of the postwar construction boom for at least some time to come, the future for the cement industry looks bright. Despite the fact that building will in the future, as it always has in the past, experience cyclical swings and disturbing recessions, we have high hopes for the onward progress of the Lehigh Portland Cement Company in the years that lie ahead."

As far as market distribution is concerned, the proportion of shipments in bulk continues to increase, reflecting in part the continuing growth of the ready-mixed concrete industry. More cement is being marketed for highway construction and that proportion is expected to continue to increase in the years ahead. About 20 percent of the total cement was used for highways in 1954 and likely will increase to one-third of the total if the plans for accelerated highway construction materialize. A few companies mentioned a trend to selling more cement within a smaller radius of plants, and the use of more trucking in certain areas.

Among the more informative comments on business conditions were the following:

#### A LARGE EASTERN MULTIPLE-PLANT COMPANY:

"The Department of Commerce and Labor predict new construction expenditures in 1955 totaling \$39½ billion compared with an estimated \$37 billion in 1954 and \$35.2 billion in 1953. F. W. Dodge Corp. is forecasting a 6 percent increase in dollar volume of building in the 37 eastern states next year over 1954. Generally speaking, we agree with these optimistic forecasts and believe that cement shipments in 1955 should exceed this year's expected total of 268 million barrels.

"We believe it is reasonable to expect a cement demand of more than 300 million barrels in a not too distant year and, therefore, the productive capacity of our industry must continue to expand if this demand is to be met. The high cost of building new capacity versus the relatively low price of cement is a deterring factor in such an expansion program. Many plants were built at a cost of \$3.00 or less per barrel of annual capacity. Today's construction costs are about three times

as great, whereas cement prices have increased only about 60 percent during the same period. Obviously a higher price for our product is required to attract substantial capital investment in these new high cost facilities.

"Our shipments of cement this year are slightly less than last year and would have surpassed those in 1953 had it not been for strikes of two months' duration at one plant and over one month at another plant. In 1955 we expect to ship our practical capacity. The use of bulk cement continues to increase. The steadily increasing demand for cement by ready-mixed concrete producers is noteworthy."

#### AN OHIO MANUFACTURER:

"The volume of cement business generally in Ohio in 1954 exceeded that of 1953 and the outlook for 1955 indicates an increase over 1954, due to heavy paving commitments on the Ohio turnpike and an accelerated state highway program. Due to improved plant efficiency, we were able to slightly increase our shipments during 1954 over the shipments made during 1953."

#### ANOTHER OHIO MANUFACTURER:

"Our shipments in 1954 will be greater than they were in 1953. Also we expect them to be greater in 1955 than this year. Most of our Turnpike commitments will be shipped next year rather than this year. There have not been any unusual changes or trends in distribution except shipments in bulk have been increasing yearly and shipments in paper bags are decreasing."

#### AN EASTERN AND SOUTHEASTERN MANUFACTURER:

"Our volume of business was only slightly greater in 1954 than in 1953 although in both years we were able to market the entire output of our plants. I anticipate that the demand for our product in 1955 will exceed that of 1954."

#### A LEHIGH VALLEY MANUFACTURER:

"We shipped to capacity in 1953, and will do so in 1954 — some 2,000,000 barrels. The outlook for 1955 from our viewpoint is that the demand will be fully as great as it was these past two years."

#### A LARGE MIDWESTERN MULTI-PLANT COMPANY:

"I think it is essential that our industry recognize the need for expanding its capacity very materially in the next five years. Our company has in mind a program which would call for about a 35-45 percent increase within that period and that program is now under way. In the next two years

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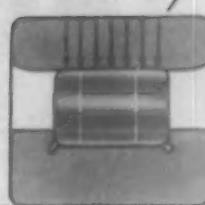
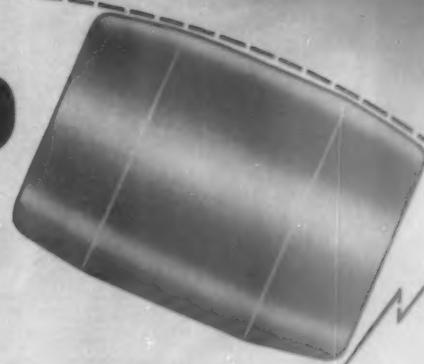
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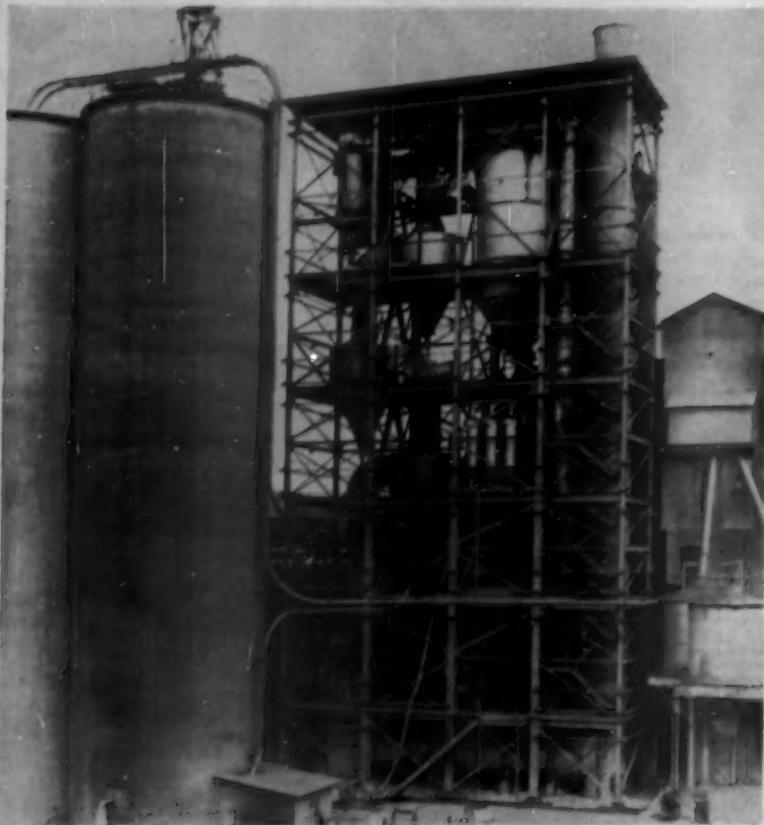


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**Preheater installation** at Allentown Portland Cement Co., Evansville, Penn., in which dry, pulverized raw materials are preheated while suspended in rotary kiln gases. Several other preheater installations have been announced as scheduled for 1955.

alone, we are planning to spend ten million dollars which is a large sum when related to the net worth of our company.

"Our physical volume of business in 1954 was approximately 6 percent greater than in 1953 and the outlook for 1955 is for an increase of an additional 5 percent. The market distribution in 1954 was approximately the same as in the preceding year but we note a trend over recent years, of selling a greater proportion of our production at points slightly closer to our mills. In other words, the average radius of shipments is becoming smaller."

#### AN EASTERN MANUFACTURER:

"Our volume of business in 1954 was slightly greater than in 1953, although both years required our full production. We were able to increase through efficiency of operation, approximately five percent.

"We have not observed any unusual change or trends in market distribution. There has been for some time an increase in the ready-mixed concrete field rather than job mix and also a continuing demand for truck delivery in economical areas, and as you know we have provided special facilities at

our plant for prompt handling of truck deliveries."

#### A WESTERN MANUFACTURER:

"Our volume of business in units shipped looks as though it will run 3½ percent ahead of last year; dollar-wise perhaps somewhat more because of a price increase which took place during the year."

#### A MANUFACTURER IN THE MIDWEST:

"I feel so strongly the need for a more productive capacity that I am having engineering studies, as well as market analyses, made with the thought of increasing our present capacity fifty percent."

#### AN EASTERN MANUFACTURER:

"There have been rather widespread reports that there were 'shortages' of cement, and the extent of these so-called 'shortages' has been much exaggerated during recent years.

"Our total volume in 1954 will be practically the same as in 1953. This year we have been serving a higher percentage of paving work and a somewhat smaller percentage of commercial building construction.

"Our outlook at the future demand for cement can be based only on the

studies of specialists in the field of measuring future economic activity. Many of these studies have already been published, and they beget considerable optimism. We believe it is reasonable to anticipate a continuing increase in cement use in the years ahead."

#### A WESTERN MANUFACTURER:

"The volume of cement consumed in Oregon for the first half of 1954 was approximately 18 percent less than the volume consumed during the same period of 1953. However, it is believed that the second half of the year 1954 will show less of a drop in volume from 1953 than was experienced during the first half of the year."

#### Plant Rehabilitation

As of the end of 1954, the portland cement industry as a whole had increased capacity by 18 percent or 46 million barrels annually since World War II, which would appear conservative, but the industry had a very great excess in productive capacity up until the war.

Very substantial investments for plant rehabilitation and enlargement were completed or undertaken in 1954 and, according to programs already announced and comments in letters received, 1955 will be marked by accelerated plant improvements and construction. Some very substantial multi-million dollar programs have recently been announced, for increased capacity and also replacement of equipment to step up efficiency. Investments up to a million dollars and more are ear-marked for plant rehabilitation in plants, even where no expansion is scheduled.

The majority of companies are planning expansion in 1955 and even where substantial enlargements were made or started in 1954. This will involve many new kilns, some with pre-heaters, and will include proportionate increases throughout these plants to balance out production. A number of companies are in the midst of technical and economic studies which will reflect in programs to be announced in the near future. Our observation is that capital investment to be made will be of unprecedented proportions.

There may possibly be more mergers involving small companies since it is most economical to buy older mills. The cost is considerably lower than the \$10 per barrel of annual capacity cost to build a new mill, even after substantial improvements.

Among examples of what is being accomplished and planned are the following:

"We are now engaged in rehabilitating one of our plants with an increase of 25 percent in its productive

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Bin-batching costs drop fast when mixing plants load hoppers with high-lift, long reach, fast-moving MM Wheeler-Loader units.

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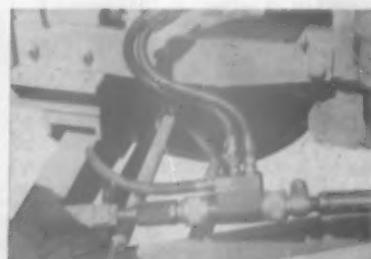
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Minneapolis 1, Minnesota



Owner of this St. Paul, Minn., mixing plant replaced two loader outfits with this MM Wheeler-Loader unit; loads bins for less.



Wheeler maneuverability plus good bucket control speeds up surface mixing operations. Shuttle gearing spots loads in half the time.



UTIL Wheelers available with hydraulic POWER-flow steering for maximum operating ease. Built-in safety features insure constant control.

capacity. When this work is completed in 1955 we will go on to a similar program at one of our other plants."

**A SMALL EASTERN MANUFACTURER:**

"We are now studying various ideas for plant rehabilitation but as yet I am not in a position to give you any definite answers on this subject."

**A MIDWESTERN MANUFACTURER:**

"Our company plans additional refinements in our process of manufacture, and machinery replacements with some additional production."

**ANOTHER MIDWESTERN MANUFACTURER:**

"Our plants are not sufficiently along to make any statement as to rehabilitation or capacity increase at this time."

**A SOUTHEASTERN MANUFACTURER:**

"We are attempting to carry out a modest program of plant rehabilitation with the twofold objective of increasing productivity and realizing some cost reduction."

**A SMALL EASTERN MANUFACTURER:**

"Our board of directors at the beginning of the year authorized an expenditure of some \$2,000,000 for plant rehabilitation, and this program, including the building of a crushing plant on the floor of the quarry, raw material silos, direct coal firing to the kilns, etc., is now under way, and will be completed some time in March, 1955. Studies are being made for the installation of a new kiln and a raw mill. In the first instance, more efficient handling is indicated, and in the second instance, somewhat increased production."

**A SMALL EASTERN COMPANY:**

"We have in progress at the present time the construction of additional storage silos which we expect to have ready for the 1955 season and this will add approximately 155,000 barrels of additional storage capacity. We have, of course, studies going on for additional improvement and capacity but will not have any of this determined or in service in 1955."

**IDEAL CEMENT CO.:**

"We now have on the boards a program involving additional storage capacity and balancing out of raw and finish grinding capacity at Mobile, Baton Rouge, Houston and New Orleans. We are also making intimate studies of possibilities of increasing the capacity at three of our older locations. Whether this increased capacity at the older locations will take the form of additional kilns and mills or whether we will do as we did at Port-

land and Devil's Slide and build completely new plants alongside the existing ones is a decision which has not yet been made."

**AN EASTERN MULTI-PLANT COMPANY:**

"Our ten million dollar program for the years 1955 and 1956 covers not only expansion but also rehabilitation of certain of our facilities. This rehabilitation not only replaces worn out and obsolete equipment but will also provide for the introduction of more modern machinery with a consequent reduction in costs to be expected."

**LONE STAR CEMENT CORP.:**

A \$14.2 million program for remodeling and enlarging Lone Star plants at Nazareth, Penn., Greencastle, Ind., and Bonner Springs, Kan., was announced November 15 by president H. A. Sawyer. This program is already underway and will increase annual productive capacity of the company by 1,660,000 bbl., raising the company's total capacity to 35,660,000 barrels annually for 18 plants. An additional kiln will be installed at each of the three plants together with auxiliaries. A new crushing plant, a raw and finish grinding installation, additional blending tanks, an electrical precipitator installation and other extensive equipment and alterations will round out the Nazareth program. A coal mill, addition to the finish mill, added storage and loading facilities and power transmission improvements will be installed as Greencastle. At Bonner Springs, a new raw ball mill, coal mill, clinker mill, added power distribution equipment, raw material feed bins and new slurry tanks will be installed.

Since World War II, productive capacity of Lone Star has been increased by 42.6 percent or 10,660,000 bbl. annually, and expenditures exclusive of a new Brazil plant have totaled \$85 million, over and above normal outlays to maintain plants in efficient operating condition.

**A SMALL EASTERN COMPANY:**

"We are in the midst of extensive studies of our present equipment, and we are committed to a program of plant expansion combined with rehabilitation, which will begin in the Spring of 1955, and will provide extra production for the year 1956. At the present time we are thinking in terms of approximately 800,000 in additional clinker capacity."

**UNIVERSAL ATLAS CEMENT CO.:**

"Our new plant at Universal, Penn., should be in full operation by the middle of next year. We will shortly begin installation of another kiln at our Fairborn, Ohio, plant which will in-

crease the annual clinker capacity there by one-third. At our Independence, Kan., plant we are completely modernizing our raw materials crushing plant and installing new facilities for raw materials storage, drying and blending. It is our intention to proceed in the near future with construction of additional facilities at our Buffington, Ind., plant which will increase capacity at that location by more than 3,000,000 barrels of cement annually. We are not yet ready to announce other plans for increased production."

**A FAR WESTERN COMPANY:**

"We have expended approximately \$1,000,000 during the year 1954 in rehabilitating our plants and opening up new quarries."

**A LARGE EASTERN MULTI-PLANT COMPANY:**

"We plan to spend about \$3 million on plant rehabilitation. We may increase capacity slightly but probably less than 5 percent."

**A CALIFORNIA COMPANY:**

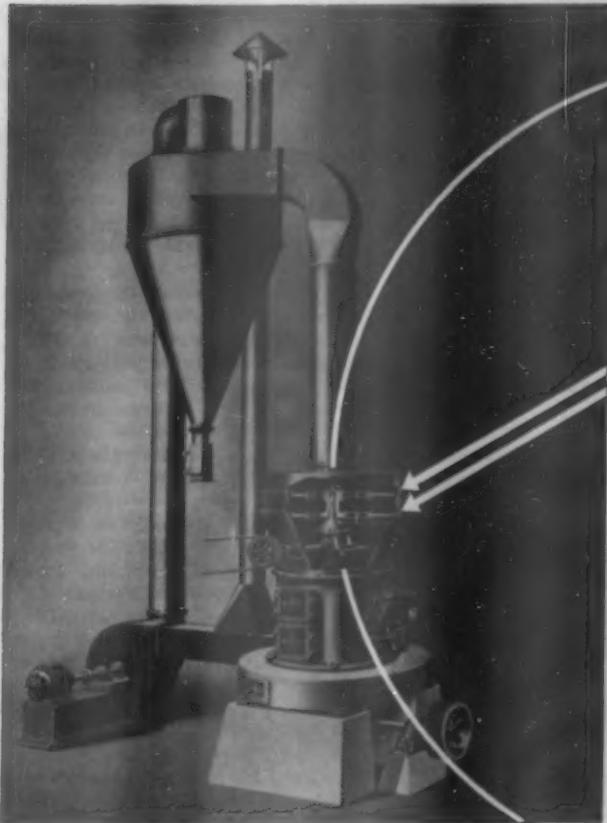
"Plant rehabilitation and improvement in 1955 will exceed 2 million dollars — all for rehabilitation and improvement."

**A MIDWESTERN COMPANY:**

"Specific plans are for an increase of approximately 1,000,000 barrels for 1957."

The foregoing are in addition to programs for plant construction announced either as completed or underway or projected in 1954 and most of which have already been announced in **ROCK PRODUCTS**. Among these are the increase from 3000 bbl. to 4500 bbl. per day being completed at the Howes Cave, N. Y., plant of North American Cement Corp.; addition of a third kiln by the Arizona Portland Cement Co.; one million barrel increase by Monolith Portland Cement Co.; the finish mill installation by Ideal Cement Co. at San Juan Bautista, Calif.; the new distributing plant of Permanente Cement Co. at East Pasco, Wash.; additions being completed by General Portland Cement Co. raising capacity 1½ million barrels at both the Houston and Dallas plants, and Marquette's large rehabilitation programs at its recently acquired Superior, Ohio, and Rockmart, Ga., plants. A separate article in this issue on Huron Portland Cement Co. tells of plans to increase capacity of the world's largest mill to 12 million barrels a year.

Mr. Young's paper, already referred to, covered the postwar expansion of Lehigh Portland Cement Co. It started in 1948 with doubling of the Metaline Falls, Wash., plant. New



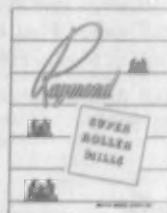
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BH-52-R

production was added the following year at plants in Virginia and Iowa. The Bunnell, Fla., plant was completed in 1952. At the end of 1954 the capacity of the Alsip, N. Y., mill was doubled. Work is now underway to increase the Bunnell plant, with completion scheduled for June, 1955. By the end of 1955 capacity of Lehigh will have been increased by 27 percent from 19,300,000 bbl. to 24,500,000 bbl.

In this 9-yr. period, the company has spent \$66 million for plant rehabilitation and expansion, of which most has been for improvement of efficiency. Another \$60 million will probably be spent between the first of 1955 and the end of 1960.

Mr. Young summed up the requirements for his company in the following:

"The average over-all life of a cement plant is 25 years. The present annual capacity of our plants, including that which will result from expansion projects now under way, is 24.5 million barrels. From our own experience we have found that the cost of entirely new plant construction is somewhere in the neighborhood of \$10 per barrel of annual capacity. To make our calculation simple, let us round out the 24.5 million to 25 million barrels of capacity. On the basis of these factors, we should set aside each year enough money to rebuild 1/25th of our capacity, or one million barrels per year, which at present cost would amount to \$10 million per year for replacement."

He further covered the problem of financing as follows:

"In determining our cost of manufacture, we are permitted under accepted accounting procedures to take into consideration the actual current cost of labor and materials, regardless of fluctuations in the purchasing value of the dollar. On the other hand, our books show that, because of inflation, depreciation provided in the conventional manner on an original cost basis has, for the last fifteen years, been at least 50 percent short of providing sufficient funds for replacement of worn-out plant and equipment.

"Some relief has been afforded through accelerated amortization under our Certificate of Necessity and now by means of accelerated depreciation permitted under the 1954 Revenue Act. While this much liberalized plan for depreciation in the new Tax Law will be helpful, it still falls far short of the incentive plan in other countries."

In raising Lehigh's capacity, he pointed out that the company has been compelled to use its replacement money for expansion, in order to meet public demands, to the detriment of

those plants which require complete rehabilitation. He said, "Assuming that there will be an increase of approximately 20 percent in the demand for cement over the next 15-year period, the Lehigh company, merely to hold its present position in the industry, would have to increase its capacity by five million barrels, or at the rate of approximately 300,000 barrels per year. This program would probably cost \$3 million per year." This would bring to \$13 million a year, the requirements for rehabilitation and expansion. Mr. Young stated that a company should not be compelled to borrow money for replacement, and that good management has no choice but to retain a substantial portion of reported earnings to supplement the amount of depreciation currently allowed. Such retained earnings, he said, should be recognized as representing a cost of manufacture which should properly be included in determining the selling price of cement.

On the subject of financing expansion, he said: "If the expansion is merely to meet the increasing demands for the product and only to keep pace with the natural growth of the industry, it is an open question whether a company should be forced to go into debt or dilute its stock in order to perform its required function to the public. Moreover, the severe cyclical influences to which the cement industry has been subjected do not warrant the assumption of heavy debt or burdensome dividend requirements. If we are to be adequately prepared for a continuation of the construction boom, if we are to be fully geared for whatever unforeseen demands there may be for defense projects, if we are to be able to furnish the peak seasonal requirements for the gigantic highway construction program ahead, we must of necessity provide additional capacity at strategic locations. Although we probably will be compelled to borrow for future expansion, it would seem, because this money, like that required for replacement, is for the normal conduct of our business, that at least a part of these funds should in all fairness be taken out of retained earnings. The cement industry, like the steel industry, has kidded itself too long into accepting its reported earnings as the true reflection of the health of its business."

#### Cement Shortages

Cement shortages occurred at least for intervals in nearly all areas in 1954 but some manufacturers believe reports of shortages have been exaggerated. The situation was most severe in the east where it was aggravated by the two months' strike which affected a number of mills. There was more



#### Pangborn shows Daystrom

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In addition, Pangborn still saves Daystrom money every year by reducing dust damage to machinery, cutting repair bills and downtime, and lowering plant maintenance costs.

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# Pangborn

## CONTROLS DUST

evidence of use of out-of-area cement than in the previous year. Part of the shortage has resulted from the percentage increase in freight rates which has caused many mills to restrict their marketing area.

Extent of the shortages varied considerably between areas. In some, there were merely delays in deliveries during periods of peak demands and no construction actually had to be deferred into 1955 due to shortages.

In general, the supply situation was better in the midwest and south than in the east and there was no shortage in the northwest. Amount of the shortage in southern California was negligible. Outside mills shipping into the east reported almost unlimited demand during some periods. Some large projects like the New York Thruway were responsible for shortages that are expected to be corrected in 1955. In spite of more complaints about shortages in 1954 than in 1955, apparently the cement industry absorbed more freight costs than it did in 1953.

Among comments were the following:

#### EAST:

"There has been a deficiency of cement in 1954 in the eastern states due principally to strikes. The shortage was alleviated to a large extent by shipments from distant mills. We continue to absorb freight in some areas to meet in good faith the lower delivered prices of competitors."

#### EAST:

"Yes, there has been a shortage of cement and in some of our marketing areas there has been absorption of freight costs to meet competition in certain areas."

#### OHIO:

"There were periods of peak demand during 1954 when deliveries were delayed in various parts of the state. To the best of our knowledge, however, no construction that was scheduled for 1954 has been deferred due to inability to secure cement. There was some out-of-area cement used at a few scattered points, but in general the demand was supplied by local producers. There has been some indication of freight absorption on the part of some companies — which indicates a trend in that direction."

#### EAST:

"In 1951, 1952 and 1953 there was a definite shortage of cement in our shipping area particularly during the summer and Fall. However, in 1954, while cement was a little tight in August, September and October, yet there was no actual local shortage. All of our customers were well taken care of

and any excess cement was shipped out of the territory. The demand for cement, out of territory, during the summer and Fall was practically unlimited. For a little over a year now we have been absorbing freight and trucking zone costs to meet competition when necessary."

#### EAST AND SOUTHEAST:

"There was a shortage of cement in 1954 in the northeastern part of the country and we have not absorbed freight in that area to meet competition. There has been no such shortage of cement in the midwest or south and we have been absorbing freight in those areas throughout the year."

#### MIDWEST:

"There has been some shortage of cement in our marketing area during the Fall months both in 1953 and 1954, and there has been some absorption of freight to meet bona fide competition at the markets."

#### EAST AND SOUTHEAST:

"During 1954 the demand for cement has exceeded the supply during the period of peak consumption. This condition has been more noticeable in the northeast than in the southeast. In the southeast freight absorption to meet competition is prevalent."

#### EAST:

"There has been a shortage this year in our marketing area due largely to a two months' strike during the height of the shipping season, affecting all of the Hudson River mills and six of the Lehigh Valley mills. Had this not developed, it is felt that present capacity would have satisfactorily supplied the demand."

#### MIDWEST:

"There had been a rather acute shortage of cement in most of the marketing areas since the early part of August. At the start of the current year we were absorbing freight costs in two of six of our marketing areas."

#### WEST:

"At no location where we do business has there been a shortage of cement this year; on the contrary, in a few locations we have absorbed freight to meet competition, although this is not as yet a firm practice."

#### EAST:

"Certain areas, principally the northeast, felt a periodic shortage of cement due in a large measure to prolonged strikes in the Hudson River Valley, as well as eastern Pennsylvania, and to some extent Maryland and Virginia. These shortages were of a temporary nature and we know of

no important work that will be carried over into 1955 as a result of these strikes. It has been noticed that in some areas it is necessary to absorb some freight to meet competition. We have found this to be true from our own experience. It is difficult for us to state that freight absorption has become a general practice in the industry."

#### EAST:

"There was some shortage of cement in our marketing area during 1954 due largely to the pressure for completing the New York Thruway between Buffalo and the Hudson River, but there was an improvement in 1954 over 1953. So far as we can see now the supply for our area will be sufficient for 1955 needs except for unforeseen pressures that may develop in public works. There has been some absorption of freight cost to meet competition but it has been very limited in extent."

#### WEST:

"There has been no cement shortage in this area this past year. Companies outside the State who ship into Oregon meet the existing price through absorption of transportation charges."

#### Slag Cement

Since portland blast furnace slag cement apparently is growing in interest, we sought comment on whether its use would develop and whether it will be a means of increasing cement supply.

Replies indicated that such cements are receiving much attention and that their manufacture would help stretch the cement supply. Apparently it is gaining acceptance where it is being promoted and when a good quality of granulated slag and accurate control are used in its production.

Among statements made on the subject, by both manufacturers and non-manufacturers of slag portland cement, were the following:

"We are presently producing portland blast furnace slag cement at two of our plants and customer acceptance thus far justifies our belief that there is a bright future in this country for this product which has already established itself in Europe. Naturally if its use develops as expected, the supply of available cement will be increased."

\* \* \*

"Slag portland cement has been produced by two manufacturers who serve parts of Ohio, and both have been successful in promoting its use for pavements, which might be considered indicative of eventual general acceptance. Its use may develop in those areas where cement is manufactured and where slag is available

at extremely low cost, and it could be a means of increasing cement supply in those restricted areas."

\* \* \*

"There seems to be a good deal of interest in slag portland cement for concrete pavements and also for other uses. We understand a number of manufacturers are producing a considerable quantity of slag portland cement now and, of course, this has a tendency to increase the cement supply."

\* \* \*

"Since 1938 we have been manufacturing a portland pozzolan cement (portland slag type) and the demand has increased so much that we no longer manufacture much of the portland cement. We are now down to only two or three customers, who have not as yet changed over. This type of cement is becoming more popular but the manufacture of it must be limited to those sections where a good granulated slag supply is available. By this I refer to both supply and quality. I cannot see where the manufacture of this type of cement can increase the cement supply as the finish mills can handle just so many barrels."

\* \* \*

"To the best of my knowledge, slag portland cement has not been subjected to extensive research and not too much is known about its characteristics over a period of time. From the slim evidence we have seen to date, we sense that there may be considerable difficulty encountered in obtaining a closely controlled chemical product and therefore the consistent reliability of its characteristics are open to question."

\* \* \*

"It is quite apparent that the interest in the use of slag cement is growing. What effect these cements will have in the over-all picture of supply and demand for all purposes we are not in a position to predict at this particular time. We believe that a number of years will elapse before a real trend in that direction will be noticeable."

\* \* \*

"As one of those companies that manufacture slag portland cement, we believe it will be the means of increasing the cement supply and we are very enthusiastic about it as a product."

\* \* \*

"Under proper controls it appears that blast furnace slag portland cement gives excellent results. We are of the opinion that the specifications should be more closely drawn, and we also feel that the word 'portland' should be withdrawn from the designation; this for the reason that the definition of the term 'portland cement' carries in-

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### Tons of Performance



Crawler Scraper of 3-1/2 cu. yds. capacity—cycled for gravity return—shown returning to excavation point in the pit. Ask for Catalog A and Field Report 214.

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Check on digging power . . . rate of haul . . . clean dumping. Add labor economy . . . low upkeep . . . personnel safety . . . moderate power consumption. Total up the score . . . you'll choose one of these Sauerman Machines for your operation.

**DRAG SCRAPER:** best for pit or hill excavation, reclamation or general handling of materials, wet or dry. Serves as rapid, long range conveyor. Sizes  $\frac{1}{2}$  to 15 cu. yds.

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**DRAG SCRAPER STOCKPILER:** best for profitable handling of sand and gravel, ores and chemicals. Low on first cost, plus economical one-man operation.

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Call on Sauerman's experienced engineers for the size and type system best suited to your digging, hauling or materials handling requirements. Write for catalog . . . ask for idea-packed Sauerman News.



Slackline cableway conveys difficult excavation of non-caving material from deep pit. 70% rock and 30% artificial sand prove tough digging job. Ask for Catalog C and Field Report 215.



Two small scrapers excavate different sizes of excavation sites from mining claims to built conveyors delivering to a common hopper, equal to load cars with straight or inclined chutes. Ask for Catalog E.



Crawler on boom machine dumps large load of wet peat. Bucket is gravity-reduced on track cable to digging point. Ask for Catalog J-1 and Field Report 219.

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Four 34 ft. dia. and 106 ft. high silos built especially by Federal Portland Cement Co., Buffalo, N. Y., for truck-loading of cement

herently within it the statement that nothing should be added after calcination other than gypsum. In order to keep the nomenclature clear, therefore, it seems to us that this material should be referred to as blast furnace slag cement."

\* \* \*

"We have been manufacturing blended cement using portland cement clinker in combination with granulated blast furnace slag, sold under A.S.T.M. Specifications C 205—Type IS-A, during the last four years, which has already provided a splendid means of increasing the supply of cement in this area. I believe that its use may increase somewhat, but that manufacture will surely be limited to those producers whose plants are located immediately adjacent to a source of low cost granulated slag."

#### Handicaps

One handicap to doing business stands out above all others as it affects the portland cement industry and that is the availability of capital for expansion. The portland cement industry, far more than most industries, must invest in large capacity equipment, and the cost for new facilities is three times what it was for older plants still in production. It now averages about \$10 per bbl. of annual capacity. In view of the great investment required in order adequately to serve demands of the public, many manufacturers consider the tax structure inequitable as applied to depreciation and because credit is not given for new plant facilities.

In view of the tax picture, disproportionate cost of plant enlargements

and replacements, and increased costs of everything that goes into the manufacture of a barrel of portland cement, the majority of the industry believe cement prices to be unrealistically low. The record bears out this contention. According to U. S. Bureau of Labor Statistics, the average price of cement, nationally, has increased 72 percent since 1939, whereas the composite price for all building materials has risen 156 percent. This, it would seem, is a remarkable tribute to technical progress and high production economies as practiced by the cement industry.

A few of the comments were as follows:

"We feel that high corporate taxes are a decided handicap in providing for the expansion of industry, which applies to the cement business, but on the other hand we look at the huge government debt and the world difficulties and realize that we must sacrifice a large part of earnings in support of the government's effort to protect us in world affairs. Also, we share the alarm of other people in the pressures of organized labor and the disregard in many cases of contractual obligations and yet at the same time we acknowledge that in our own case we have had, for the most part, friendly and satisfactory negotiations.

"Another matter that might be a serious handicap is the ordinances attempting to control air pollution. We are all for doing the best job we can in having a clean plant and minimizing the amount of any substances expelled into the air. We are confident that we are doing a good job but there is before local authorities here an air

pollution ordinance that, if enforced, would shut down all of the major industries having stacks in this area, and not only here—if applied other places, it would do the same. Everyone is, of course, aware of the bad situation in Los Angeles, where nature appears to be working against the efforts there. I think it is a matter that everyone should give considerable attention to and I believe that industry is not the major offender and is spending more time and money on it than any other contributing factor. I particularly refer to the great increase in motor vehicle operation and the gases propelled into the air."

\* \* \*

"Principal handicaps in doing business today are, in my view, the same as they have been for a long time particularly in reference to inequitable taxes as applied to depreciation and no credit for new plant."

\* \* \*

"We would say that in our own company income taxes and insufficient depreciation do more than anything else to stifle further capital outlay, although the 1954 law did measurably improve the situation."

\* \* \*

"As far as the principal handicaps in doing business today are concerned, cement prices are unrealistically low in light of plant replacement costs. In addition, effective capacity could be greatly increased if cement could be shipped to federal jobs on mill certificates rather than after the usual 7-day test."

\* \* \*

"The principal handicaps to doing business today are: the large amount of capital necessary; and the increased costs of replacements, expansion, machinery, etc., in keeping plants modern, efficient, and up to date, with present taxes and present prices for our products."

\* \* \*

#### Canadian Cement Plant

A MULTI-MILLION DOLLAR portland cement plant reportedly is to be built in the Edmonton, Alberta, area with European financial backing. The plant, which is expected to be in operation by 1956, will use raw materials from limestone deposits in the Cadomin area, 160 miles southwest of Edmonton. The only other cement plant in Alberta is operated by Canada Cement Co., Ltd., at Exshaw, near Calgary.

#### To Expand Cement Plant

GLENS FALLS PORTLAND CEMENT Co., Glens Falls, N. Y., recently announced a \$300,000 expansion and modernization program at its Glens Falls cement plant.

## Expanded Shale

(Continued from page 110)

a very important bottleneck to the greater use of expanded shale concrete and result in an appreciably greater output of the ready-mixed concrete plants.

### Expanded Shale Institute Formed

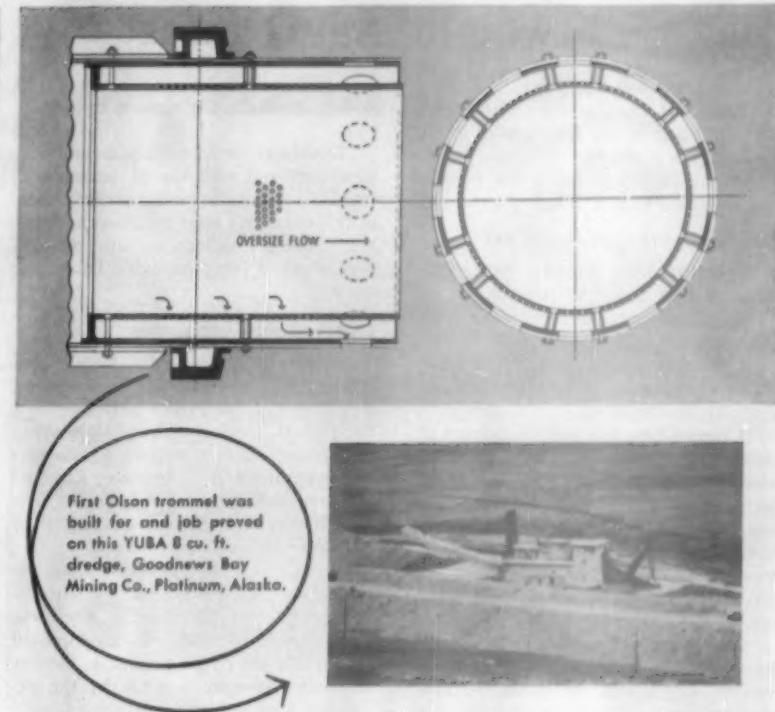
The major producers of expanded shale in the United States and Canada, recognized the need for authentic information and data pertaining to the physical properties and characteristics of this lightweight aggregate, gathered in St. Louis early in 1952 to form an organization known as the Expanded Shale Institute with national headquarters in Washington, D. C. Undoubtedly, this marked the greatest single stride of the expanded shale industry during the more than a third of a century of its existence.

The purpose of the Institute, briefly stated, is to improve and to extend the many uses of expanded shale concrete. The Institute is largely educational and technical in nature for with the huge increase during the past decade in demands for technical data by the engineering and architectural professions, the producers felt that an association of this kind was vitally necessary.

The Institute's work includes the correlation of research and experimental work already accomplished and underway by other agencies. It also is performing original research and experimentation, educational and promotive work with the entire construction industry, including architects, engineers, universities, and the general public. Technical bulletins are published from time to time covering the various phases of this type of construction.

Frank G. Erskine, one of the outstanding engineers in the field of lightweight concrete and formerly with the Portland Cement Association, was selected as Managing Director of the Institute. S. Carl Smithwick of Portland, Ore., was elected the Institute's first president, being succeeded in the spring of 1954 by Warren W. Allen of St. Louis, Mo. Other members of the executive committee are: Alex R. McVoy of Dallas, Texas, first vice-president; William H. Thomas of San Francisco, Calif., second vice-president; George Bickel of Dallas, Texas, secretary; and A. R. Waters of Kansas City, Mo., treasurer.

D & D CONCRETE PRODUCTS CO., Albion, Mich., owned by Dick Schultz and Don Hunt, has purchased the Sager Albion Ready-Mix Concrete Co., also of Albion, formerly owned by Richard Sager, Jackson, Mich.



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Now, increase screening capacity as much as 25% without lengthening your screens, with the new Olson patented dredge trommel.

Here's how: Olson dredge trommel mounts inside present revolving screens in the area usually blanked out by circular tread rings and blank end plates. Its perforated holes convert this blank space into an inner screening area that: (a) greatly increases screening capacity or (b) provides better classification of screened material through smaller perforation sizes.

Coarse material goes out the end, as in any conventional revolving screen; but fines pass through the perforated holes of the Olson trommel onto the blank shell plate; then through large holes to join fines from the forward screening area.

### ✓ Order from YUBA

Edward Olson developed and proved this trommel in Alaska. YUBA now has manufacturing rights under the Olson patents, and makes these trommels of ARS plate, with taper drilled holes to size and spacings you need.

Get full use from your screen; order YUBA-built Olson trommels NOW. Send detail and general arrangement of screen, hole size and spacing, for estimates. No obligation.



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# Slag-Lightweight Aggregates

(Continued from page 95)

the report on the industry's Fall meeting published in the December, 1954, issue of **ROCK PRODUCTS**.

Among comments were the following:

## PENNSYLVANIA SLAG PRODUCER:

"Our asphalt paving materials amounted to about 50 percent of our 1953 sales. Slag sales represented a slight increase. Highways took 75 percent of production and 25 percent was for all types of building and industrial construction.

"Competition has stiffened. Loss of differential in the weight of slag versus stone by arbitrary ruling of the Attorney General of Pennsylvania during the recent Republican Administration was accountable for loss of 25 percent of potential slag sales. We have operated at 75 percent of capacity.

"We are considering purchase of equipment for the production of lightweight aggregates. A new crushing and screening plant was put in production in 1953. Handicaps are loss of differential in the weight of slag versus stone, and contractor owners of portable bituminous mixing plants."

## SMALL ILLINOIS SLAG PRODUCER:

"Our volume of business in 1954 was approximately 20 percent over 1953 and I would estimate that 1955 will be 50 percent over 1954. Prices remain the same and as far as we know our prices are the lowest in our field. We shipped approximately 75 percent of our distribution into the concrete masonry field with 25 percent going into agriculture.

"We have some competition in the concrete masonry field but until we have done more field work in agriculture, we presume our competition will allow us to do the work unmolested. We do not doubt that once the work has been accomplished competition will follow. Our percentage of sales in relation to our maximum productive capacity is now at about 20 percent.

"We are continually moving samples into the areas of possible markets but as yet have not developed any positive new markets."

## EASTERN SLAG PRODUCER:

"Sales in 1955 will compare favorably with 1954. We continued in 1954 to enjoy a seller's market and 1955 appears to be the same.

"Our productive capacity is dependent upon pig iron production in this seller's market. We are operating close to 100 percent of capacity. We are

adding products for cement manufacture.

"Overhead costs continue to be a handicap and will be of paramount importance in a buyer's market. Also, state workmen's compensation and unemployment insurances are factors which are driving industry from our state."

## Lightweight Aggregates

Lightweight aggregates of all acceptable types, both for load-bearing concrete and the lighter varieties used for plaster, insulation, roof slabs, etc., continue to gain in volume of use and in applications. This industry has had a remarkable growth since World War II and may be expected to continue to develop rapidly.

A report on the expanded shale industry in a separate article in this issue brings out the extent of growth of this industry and the development in application of its products. Similar advances have been made by the expanded shale industry.

The perlite industry has grown to a sales volume of \$10 million since the industry started nine years ago. Its principal market is the building industry. In 1954, according to the International Perlite Institute, 208,000 short tons of perlite ore were produced and sales increased 15 percent over 1953. Sales are expected to increase further in 1955.

There are now 20 companies mining and marketing perlite ore in seven western states, and there are 75 expanding plants in 31 states.

Crude ore prices were up in 1954 while finished expanded perlite prices had decreased due to the keen competition in the plaster market. Perlite aggregate for job-mixer plaster is competing with mill-mixed perlite and gypsum, but gypsum companies continue to purchase considerable expanded perlite from independent companies.

From 75-85 percent of the total expanded perlite is used for basecoat and acoustical plasters. In 1954, perlite was used for 40 percent of all basecoat plaster. A good future is seen in insulating perlite concrete roof decks and there is a steady increase in volume for that purpose. More than 10 percent of sales now are for insulating concrete. Other miscellaneous uses, comprising a total of 10 percent of sales, are for filter material, soil conditioner, loose fill insulation, oil well concrete, paint additives, chicken litter and foundry uses.

The following comments are typical of what is happening:

## PERLITE (MIDWEST):

"It is difficult to say at this time how much our business will be improved in 1954 over 1953, due to the fact that the largest percentage of our business is done in the last four months of our fiscal year, which ends January 31. However, all indications are that our fiscal year, for 1954 will be 10 percent to 15 percent greater than the previous fiscal year.

"We have built a two-story addition to our plant to house a new perlite expanding operation. We have added six perlite products to our line: Perl-Ag plaster aggregate; Perl-Crete concrete aggregate; Perl-Flote float finish plaster aggregate; Perl-Trowl trowel-finish plaster aggregate; Perl-Kor brand cavity-fill perlite; Perlite paint additive. We are also contemplating the production of precast vermiculite concrete roof tile.

"We expect our markets to become more competitive, and are constantly developing new sales promotion programs to keep pace with present-day planning and competitive products. We have always had a long-range research program in our laboratory to assure constant improvements of our products to meet modern building demands, and we expect to continue this. Constantly increasing production costs and high taxes at the local and national level continue to be the main handicaps of business."

## VERMICULITE INDUSTRY:

"So far as we can determine, the volume of vermiculite sales in 1954 was a little higher than 1953. The major use of vermiculite is in commercial, residential, institutional, and industrial construction. The use of agricultural vermiculite is increasing steadily, however, and we expect that this will become very important in the near future.

"As in other business fields, competition has always been keen. Our research and testing programs are constantly developing new uses for vermiculite and making available fresh data for those who specify and use vermiculite products. Productive capacity of vermiculite expanding plants is about double that of sales volume.

"The machine application of vermiculite concrete, plaster, and acoustical plastic is a new and significant development in modern construction. A 5-hr. fire rating recently issued to a machine-applied vermiculite concrete spandrel wall places vermiculite concrete in a class by itself, fire-wise, making curtain wall construction available with a rating of one hour beyond the usual four hours required for fire-resistant Class A construction. A recent 1-hr. fire rating issued to a steel

deck covered with three inches of vermiculite concrete, but completely unprotected on its underside, is without precedent and indicates the value of using incombustible vermiculite concrete insulation over the deck, instead of a combustible material or a type of insulation that requires the application of asphalt or pitch. Machine-applied vermiculite plaster and vermiculite acoustical plastic are enabling the plastering industry to retrieve work lost in recent years to competitive materials.

"Member companies of vermiculite Institute advise that existing plants are in good physical condition. A number of firms are planning to expand facilities during 1955."

#### LIGHTWEIGHT AGGREGATE (EASTERN):

"Volume in 1954 was approximately 40 percent over 1953, with prices equal to 1953 prices, and we expect 1955 volume to increase approximately 50 percent over 1954 at the same prices.

"Our biggest evidence of change in distribution of sales shows a marked increase toward concrete block plants being interested in a higher quality aggregate.

"Competition has tightened. However, our higher quality and lower cement factors have overcome most sales resistance. The 1954 sales were approximately two-thirds of our maximum productive capacity, and 1955 sales will be equal to total capacity.

"The newest market development for our product is in bituminous highway construction. This is slowly but gradually growing. We plan to change our crushing and screening setup and material handling flow in 1955."

#### Gypsum

The gypsum industry mined 11,500,000 tons of gypsum rock in 1954, which was 300,000 tons more than in 1953, and produced a record 6.3 billion sq. ft. of lath, wallboard and sheathing. The industry has become highly mechanized and, since 1945, the investment per worker has tripled. Sales of two of the four leading companies have doubled since World War II, a third has tripled its sales and the fourth has four times as much volume. It has been estimated that each of these companies is planning to spend five million dollars annually in the years ahead for improvement and modernization.

These companies, in addition to gypsum products, produce lime, asphaltic materials, insulation, asbestos cement products, acoustical materials, metal lath and many other materials for building. Research by the separate companies has resulted in the development of many products and improve-

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ments to facilitate and cut costs of construction. Producers have backlogs of unshipped orders that indicate that a high volume of sales will continue.

Several new plants are under construction near Shoals, Ind., where underground gypsum deposits are under development, and at least one plant will be completed in 1955. National

Gypsum Co. has been developing a very large new quarry near Halifax, Nova Scotia, to guarantee supplies of rock at lower cost for its Atlantic Seaboard plants and is enlarging the capacity of its Savannah, Baltimore and New York City plants by one-third to take advantage of shipments from Halifax.

placing the Ortega-Billner precast roof were shown and described by K. P. Billner, president, Vacuum Concrete, Inc. The successful application of these graceful, thin shell concrete members to low cost housing and unusual industrial structures was well attested.

Because of the illness of the author, P. Courouse presented the paper on the use of large tendons in pretensioned concrete which had been prepared by Niels Thorsen, Freyssinet Co., New York, N. Y. The team of Jack Streblow and C. M. Rollins detailed in interesting form the plant production of precast products for buildings and the laboratory control of the operations. Mr. Streblow is sales manager and Mr. Rollins is director of research for the Basalt Rock Co., Napa, California.

Friday morning a group of papers was presented under the chairmanship of V. P. Jensen, A.C.I. director. These papers dealt with earthquake and blast design of reinforced concrete structures. G. W. Housner, associate engineer, L. T. Evans Foundation Engineers, Los Angeles prepared a paper entitled, "Earthquake Resistant Design Based on Dynamic Properties of Earthquakes." The second paper of the Friday morning session presented an example of application of dynamic load parameters to structural analysis.

Karl V. Steinbrugge and Donald F. Moran, structural engineers, Pacific Fire Rating Bureau, from San Francisco and Los Angeles, covered cast-in-place concrete, precast concrete, and concrete masonry structures in discussing the performance record of reinforced concrete and concrete masonry in recent Western U.S. earthquakes.

Ronald Craven led the forum session Friday afternoon into some very interesting fields. The extensive research by the Southern California Rock Products Association and the Ready Mixed Concrete Association on the subject of compressive strengths of concrete and aggregate rattle loss was prepared by Everett A. Jumper and John D. Herbert, members of the Association's technical committee and Curtis W. Beardsley, director, Los Angeles City Bureau of Standards. Mr. Jumper presented the data and responded to discussion from the floor. The paper was timely in that it treated a problem common to many of the concrete men assembled.

New to many was the color and texture by aggregate transfer method. A paper by Robert E. Boner, architect, Portland Cement Association, explained this unique principle of transferring from the form to the finished concrete wall a layer of colored ag-

## A.C.I. Meeting In Los Angeles

By E. L. HOWARD\*

A CONCRETE MAN driving in Los Angeles, Calif., becomes so interested in the broad excellent freeways and structures that he hardly can keep up with the traffic. The extensive and diversified use of concrete throughout the area assured a favorable environment for the regional meeting of the American Concrete Institute.

Chairman Samuel Hobbs and his committee organized the technical program and entertainment. Four hundred and eighteen were registered for the meetings; meeting rooms at the Statler were well filled for every session. The ladies, nearly a hundred of them, enjoyed the Art Linkletter show, the Dinah Shore show, and the things that only fabulous Southern California can offer.

President Charles H. Scholer spoke at the Thursday luncheon. He reminded us that there are many aspects to concrete. What is most important depends on whether one is a college professor or a concrete finisher. He urged that more papers be written on the practical application and problems of concrete. We were further charged with the responsibility of taking full advantage of all the knowledge of concrete that has been now assembled. There is a need, he said, to repeat over and over again the things we really know about concrete.

Fun was dished out in generous portions at the Thursday night dinner in the form of entertainment. The cocktail hour and fine dinner, the dancing and the Hilo Hattie floor show added a touch of friendliness and fellowship long to be remembered. A second luncheon was held on Friday.

Prof. J. W. Kelly led off the opening session with a paper authored by himself and Milos Polivka, both from the University of California at Berkeley. Joe Kelly's paper gave some historical background of the search for a better way to measure workability of concrete. He pointed out some experiences of others using the Kelly

ball in the control of concrete in actual construction practice, and the ease and accuracy of the ball in the control of workability of concrete on many types of work in several states.

"Alkali — Aggregate reaction — What it is and What to Do About It" was discussed by Hubert Woods, director of research, Portland Cement Association. The talk was high-lighted by slides portraying the problem on many jobs. He suggested three ways to combat the reaction: to use cement low in alkali, use nonreactive aggregate, or use certain proven additives classed generally as pozzolans.

Gordon W. Greene, district testing engineer, Pacific Coast Aggregates, Inc., Fresno, Calif., described his company's experiences with the Schmidt concrete test hammer. He reported the extensive work done in correlating the hammer test results with actual compression tests. Because of this study Mr. Greene is confident that the instrument is useful for the measure of strength gain in concrete prior to removing forms, lifting tilt-up slabs, and many other similar problems. He has found the hammer useful as a non-destructive test of concrete of doubtful strength, and a guide as to the best places to cut cores, etc.

J. H. Walker, general manager, Research and Development, Portland Cement Association, presented a new method of determining the cement content of concrete before hardening. The method, using heavy media separation, is still in the trial stage.

The morning session was ably directed by chairman Hugh Barnes, district engineer, Portland Cement Association, Los Angeles.

R. W. Spencer, manager, Engineering Department, Southern California Edison Co., was the chairman of the afternoon session on Wednesday. From the University of California at Berkeley, came T. Y. Lin to describe work done in Belgium on the strength of continuous prestressed beams under static and repeated load.

Pictures showing the methods of

\*Testing engineer, Pacific Coast Aggregates, Inc., San Francisco, Calif.

gregate, producing a concrete with a variety of colors and textures.

The concrete design data for the Edwards Air Force Base heavy duty airfield pavements was presented by Robert J. Shultz, Corps of Engineers, Los Angeles. W. E. Wilson detailed the design and construction problems of a special purpose waterfront structure of precast reinforced concrete. Following the papers of this session some time was profitably spent discussing papers given throughout the meetings.

This gathering of concrete men was the first of its kind in Southern California. It most certainly will not be the last. Every person attending felt benefited and caught some of the contagious enthusiasm typical of this Los Angeles area.

#### N.A.L.I. Program

(Continued from page 130)

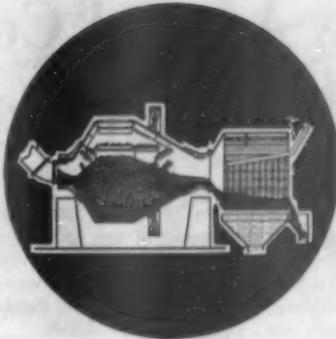
day. The speaker will be Sen. Frank Carlson whose address will be "Conservation of the Soil—Our Greatest Resource." Sen. Frank Carlson is a farmer-stockman from Concordia, Kan., and a key figure in the Eisenhower Administration.

The afternoon session will be devoted to a panel discussion on operation with Robt. M. Patton, Plum Run Stone Division, New York Coal Sales Co., Columbus, Ohio, presiding. He will be assisted by E. C. Farrar, American Cyanamid Co., Latrobe, Penn., and Jules E. Jenkins, Vibration Measurement Engineers, Chicago, Ill. Members are requested to write out their questions and leave them at the registration desk to give the panel an opportunity to preview them.

The evening session will start at 6 p.m. with a reception for members and guests, followed by the annual banquet. President John M. Deely will preside. Congressman Jamie L. Whitten of Mississippi will be the speaker on the subject, "Some Things Don't Change—Ability of the Nation to Produce Food, Clothing, and Shelter from the Soil Remains Basic."

Ladies attending the convention will be given an opportunity for trips to the Halls of Congress, sightseeing trips to Mount Vernon, Arlington Memorial Cemetery, museums, art galleries, embassies, etc. Sunday, Monday and Tuesday coffee will be served beginning at 9:00 a.m.

WATERS CONCRETE CO., Quitman, Ga., has been sold to Clark Adair, who plans to combine operations with Adair Sand and Gravel Co., manufacturing concrete burial block facilities. The company, formerly owned by Bartow Waters, will operate under the Adair name.



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# Program of the Annual Conventions of the N. S. & G. A. and N. R. M. C. A.

MAMI, FLA., AND ITS SPACIOUS MUNICIPAL AUDITORIUM will be the setting for the annual conventions of the National Sand and Gravel Association and the National Ready Mixed Concrete Association from January 9 to 13. The National Ready Mixed Concrete Association is celebrating its Silver Anniversary this year, and the entertainment will emphasize this occasion. Members and guests are urged to register at the Municipal Auditorium as early as possible. Prior to the opening session on Monday, the registration desk will be open Saturday, January 8 at 9:30 a.m. and at 2:30 p.m. Sunday, and will continue on succeeding days of the convention.

## Monday, January 10

The N.S.G.A. Board of Directors will meet at the Columbus Hotel from 9:30 a.m. to 12:30 p.m., and the N.R.M.C.A. Board of Directors will meet from 2:30 p.m. to 5 p.m. Both groups will have a joint luncheon. A conference of State and Area Association Executives will be held in the Bayview Room of the McAllister Hotel, starting with a luncheon at 12:30 p.m. H. G. Feraud, executive secretary of the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association, will preside.

## Tuesday, January 11

Separate sessions of the two associations will be held at the Auditorium. The president of each association will preside and give his annual address, the nominating committees will submit their reports and officers for 1955 will be elected. The N.S.G.A. will vote on a proposed amendment to its constitution. Safety trophies will be presented and the three winners will describe the safety programs of their companies.

In the afternoon, the two associations will hold a joint session with Robert Mitchell of Los Angeles presiding. Three distinguished speakers will address this session: "The Construction Outlook for 1955," by Frank J. Rooney, president, Frank J. Rooney, Inc., Miami, Fla., and vice-president of the Associated General Contractors of America, Inc.; "Twenty-five Years of Post War Growth for the Cement Industry" by Jos. S. Young, president, Lehigh Portland Cement Co., Allentown, Penn.; and "President Eisen-

hower's Highway Program, a Most Important Milestone in the Development of our Nation's Highways" by Ezra C. Knowlton, executive vice-president, Utah Sand and Gravel Products Corp., Salt Lake City, Utah.

## Wednesday, January 12

In the morning, the two associations will hold separate sessions. The N.R.M.C.A. will have an engineering program, with Wm. J. Hicklin, Jr., Jacksonville, Fla., presiding, including the following: "Effect of Curing Conditions on Strength Tests of Concrete" by D. L. Bloem, assistant director of engineering, N.R.M.C.A.; "A Consulting Engineer Views Ready-Mixed Concrete" by Miles N. Clair, president, The Thompson and Lichtner Co., Inc., Boston, Mass.; "An Operator Trained as a Concrete Research Engineer Views Ready-Mixed Concrete" by Fred F. Bartel, Tews Lime and Cement Co., Milwaukee, Wis.; and "Specifying Bases for Acceptance Ready-Mixed Concrete" by Stanton Walker, director of engineering, N.R.M.C.A. A discussion will follow.

A concurrent joint session of the two associations will be held on taxes, cost determination and related matters, with J. Rutledge Hill of Dallas, presiding. The program follows: "Tax Planning for Your Business Under the Internal Revenue Code of 1954" by John T. Sapienza, tax counsel for the two associations; "Application of the New Depreciation Policies to the Sand and Gravel and Ready Mixed Concrete Industries" by John W. Murphy, Union Sand and Gravel Co., Spokane, Wash., and president of N.S.G.A.; "A Labor Coat and Fringe Benefits — How to Effectively Control Them" by Paul J. Kremer, The Buffalo Slag Co., Inc. A discussion of these papers will be led by M. E. Rinker, Rinker Materials Corp., West Palm Beach, Fla.; Henry H. Kirwin, Eastern Rock Products, Inc., Utica, N. Y., and E. J. Halter, J. K. Davison & Bro., Pittsburgh, Penn.

In the afternoon, the N.S.G.A. will hold a separate operating session with Louis P. Struble, presiding. The tentative program follows: a discussion of current specifications for aggregates in bituminous mixtures led by Stanton Walker; "A Test No More Reliable Than The Sample" by C. E. Proudfley, chief, materials and test engineer, North Carolina State Highway and

Public Works Commission; "Abrasive Resistance of Metals Used in Sand and Gravel Production" by E. N. Bernhardt, Warner Co., Philadelphia, Penn.; "Application of Jigs to Remove Deleterious Particles from Sand and Gravel" by E. B. Sheets, production superintendent, McGrath Sand and Gravel Co., Lincoln, Ill.; and "What About Thermal Compatibility?" by D. L. Bloem.

A concurrent joint session also will be held in the afternoon by the two associations with Norman J. Fredericks of Detroit presiding. The program follows: "What the Association's 'Chain of Protection' Means to You" by Donald Shepherd, John Hancock Mutual Life Insurance Co., Boston, Mass.; "Group Bargaining by Employers and its Status Under Present Law" by Chas. A. Horsky, counsel for the two associations and member of the firm of Covington & Burling; "The Industry Wage Pattern in 1954" by Kenneth E. Tobin, Jr., assistant executive secretary; "A Check List for Employers in Writing Labor Agreements" by Vincent P. Ahearn, executive secretary.

## Thursday, January 13

A separate session will be held by N.S.G.A., in the morning with E. K. Davison presiding. The program follows: "What May the Sand and Gravel Industry Expect in Land Condemnation Proceedings Instituted by Governmental Agencies" by Richard K. Humphries, executive vice-president, Pacific Coast Aggregates, Inc., San Francisco, Calif.; "How Britain Answers the Problem of Public Interest in the Industry" by H. E. Pierce, O.E.B., J.P., chairman, Ballast, Sand and Allied Trades Association of Great Britain; and "Why Our Industry Should be Interested in Reclamation" by F. D. Coppock, chairman of the board, American Aggregates Corp., Greenville, Ohio.

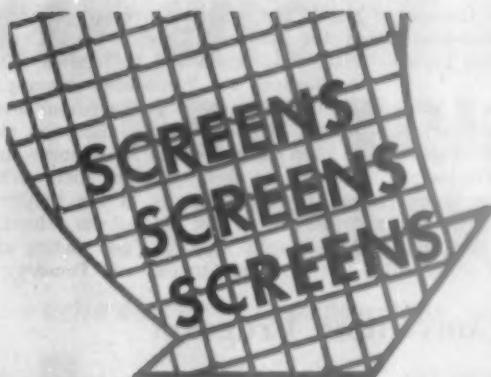
The N.R.M.C.A. also will hold a separate session in the morning with Quentin W. Best of Los Angeles presiding. The program follows: "New Promotion Aids for the Ready Mixed Concrete Industry" by H. S. Westby, manager, Housing & Cement Products Bureau, Portland Cement Association, Chicago; premiere of the new film "Quality Ready-Mixed Concrete" with L. H. Corning, director of promotion, Portland Cement Association, intro-

ducing the film, which was produced in sound and color by the N.R.M.C.A. in cooperation with P.C.A. This will be followed by a panel discussion of "Merchandising Practices in the Ready-Mixed Concrete Industry" in which the following will participate: John B. Donovan, president, Valentine Concrete Co., Inc., Springfield, Mass.; Robt. J. Hummel, vice-president, Consumers Co., Chicago, Ill.; Harold E. Shelby, vice-president and general manager, Concrete Supply Co., Charlotte, N. C.; and M. Eugene Sundt, vice-president and manager, Albuquerque Gravel Products Co., Albuquerque, N. M.

The afternoon session will be a joint meeting of the two associations with E. Phil Gemmer of Houston, Texas, presiding. Vince Ahearn, executive secretary, will give his "Washington Report" at this session. Following Mr. Ahearn's talk, there will be a panel discussion of business prospects for 1955 in which the following will participate: C. A. Barinowski, Birmingham Slag Co., Birmingham, Ala.; R. S. Barneyback, Henry J. Kaiser Co., Oakland, Calif.; Harry E. Bender, Azusa Rock and Sand Co., Azusa, Calif.; E. K. Brown, Whitney's, Duluth, Minn.; Fred P. Curtis, Lyman-Richey Sand & Gravel Corp., Omaha, Neb.; E. P. Gemmer, Texas Construction Material Co., Houston, Texas; Wm. J. Hicklin, Jr., Capitol Concrete Co., Jacksonville, Fla.; Frank L. Kelly, Colonial Sand & Stone Co., Inc., New York, N. Y.; Earl A. Mullen, Becker County Sand and Gravel Co., Cheraw, S. C.; James A. Nicholson, Nicholson Concrete Co., Toledo, Ohio; F. E. Schouweiler, Old Fort Supply Co., Fort Wayne, Ind.; and Irving Warner, Jr., Warner Co., Philadelphia.

#### Entertainment

In addition to the luncheon on Monday, preceding the State and Area Association meeting, there will be a luncheon for the ladies at the "Top O' The Columbus" at which Mrs.



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Herbert G. Jahncke of New Orleans will preside. R. B. Roberts, vice-president of the Florida Power and Light Co. will be the speaker.

On Tuesday there will be a joint luncheon of the two associations at the Auditorium with Col. H. E. Peirce of Great Britain as speaker. The ladies are invited. On Wednesday, the luncheon of the Manufacturers Division of N.S.G.A. will be held in the Pan American Room of the Columbus

Hotel. The Silver Anniversary Dinner of the National Ready Mixed Concrete Association will be held in the Auditorium on Wednesday evening. All members of both associations are invited. There will be a reception at 6:30 p.m. preceding the dinner. In addition to this reception, there will be Hospitality Hours in the Flagler Ballroom of the McAllister Hotel, commencing at 6 p.m. and ending at 7:30 p.m. on Monday and Tuesday.

Pictorial presentations will be made on the following subjects: "Jam Breaker Ahead of Feeders" by J. V. Owens, vice-president, Eastern Rock Products, Inc., Utica, N.Y.; "Modern Methods of Scrubbing and Rinsing Stone" by speaker to be selected; and "Various Methods of Stripping" by speaker to be announced later. There will be a "Get-Together" for the Manufacturers' Division new Board of Directors in the evening.

## Crushed Stone Convention Program

A PRELIMINARY PROGRAM of the 38th annual convention of the National Crushed Stone Association to be held February 7 to 9, at the Netherland Plaza, Cincinnati, Ohio has been announced. The tentative schedule follows:

### Sunday, February 6

Registrations will be accepted from 9:00 a.m. until 5:30 p.m. In the morning there will be a meeting of the Manufacturers Division, Board of Directors, and in the afternoon the Board of Directors of N.C.S.A. will hold a meeting. Registrations, of course, will continue on succeeding days of the convention.

### Monday, February 7

Monday morning program will include a moving picture, greetings from President T. C. Cooke, a report of elections by the board of directors, and reports of Engineering Director A. T. Goldbeck, Field Engineer J. E. Gray, and Administrative Director J. R. Boyd.

There will be a report of Business Conditions During 1954 and the Outlook for 1955 with a summary of reports of regional vice-presidents presented by President T. C. Cooke.

"Significant Developments in the Highway Construction Program of Tomorrow" will be the subject of a featured speaker, Pyke Johnson, chairman, subcommittee on Highway Development, Chamber of Commerce of the United States, and past president, Automotive Safety Foundation, Washington, D.C.

At the greeting luncheon, Countess Maria Pulaski, formerly with the British Intelligence Service, will be the principal speaker who will talk on "My Life as a Spy."

The afternoon session will invite the participation of both operating men and equipment manufacturers, and will start with a panel discussion on "Productive Maintenance."

"Ultrasonic Inspection of Quarry Equipment" will be the subject of an address by F. E. Pringle, field engineering manager, Sperry Products,

Inc., Danbury, Conn. This address will be followed by "Pictorial Presentations of Selected Topics on Specific Operating Problems."

In the evening there will be a "Gay Nineties Party" with dinner at 6:30 p.m. followed by entertainment and dancing.

### Tuesday, February 8

The morning session will start with a moving picture. Following the picture, Russell Rarey, chairman, Percentage Depletion Committee, and president Marble Cliff Quarries Co., Columbus, Ohio, will present his report.

An address will be given by John F. Lane, general counsel, of the National Crushed Stone Association, which will be followed by a discussion.

"The Concrete Industry Board, Its Plans for Improving the Quality of Portland Cement Concrete," will be the subject of an address by Roger H. Corbett, president, Corbett Construction Co. Inc., New York, N.Y.

"Crises Still Make Our Foreign Policy" is the topic of a talk by William G. Hetherington, news analyst and foreign correspondent, *The Newark News*, and foreign radio reporter for NBC and ABC.

The Manufacturers Division luncheon and annual business meeting, for members only, will be held immediately after the luncheon.

The afternoon session will be open to both operating men and manufacturers.

"Practical Aspects of Noise Control in Crushed Stone Plants" will be outlined by A. B. Hoffiezer, safety supervisor, Laverack & Haines, Inc., Buffalo, N.Y.

Fire insurance in quarry operations will be discussed by two speakers: "Need for Adequate Coverage" will be covered by W. E. Schmidt, vice-president and treasurer, Columbia Quarry Co., St. Louis, Mo.; and "How We Reduce Our Premiums" by Richard L. Campbell, plant engineer, Harry T. Campbell Sons' Corp., Towson, Md. These talks will be followed by a question period.

### Wednesday, February 9

There will be a moving picture in the morning followed by committee reports.

"Selling Against Resistance" will be the subject of talks by Alvin C. Busse and Richard C. Borden, sales consultants.

At the general luncheon there will be the presentation of the N.C.S.A. Safety Contest Awards by J. J. Forbes, director, U.S. Bureau of Mines, Washington, D. C. "The Sunny Side of Main Street" will be the subject of Hon. Harold Caldwell Kessinger, inspirational humorist, Ridgewood, N.J.

Two outstanding addresses will be given at the afternoon session: "The Role of the Asphalt Institute in the Asphalt Paving Industry" by J. E. Buchanan, president, The Asphalt Institute, New York, N.Y.; and "Human Response to Blast Produced Vibrations" by Jules Jenkins, president, Vibration Measurement Engineers, Chicago, Ill.

Following a reception in the evening, the convention will close with the annual banquet at which Art Briese, "America's Knight of Satire," will entertain with his talk on "Skulduggery at the Old Crossroads."

### Labor Relations

(Continued from page 71)

holiday and reporting pay, etc., but that the impasse in negotiations which precipitated the union's economic strike on August 16 was caused solely by the union's unyielding insistence upon a wage increase, which good faith bargaining could not compel the company to grant, particularly in view of the undisputed fact that it could not obtain a commensurate increase on the price of its products because of O.P.S. ceiling prices then in effect.

"We think the findings of respondent company's refusal to bargain in good faith may not be sustained upon this record. Though admittedly there were contributing irritations, we think the major portion of the testimony, including that of a union negotiator, reveals substantially nothing more than a bona fide impasse and economic strike resulting principally from respondent company's refusal to grant any wage increase and the union's re-

fusal to accept anything less. True, the Board found that the company's failure to accept . . . the union's proposal of a *contingent wage increase* to some extent objectively revealed that the ceiling price on the company's products 'was not the true reason for its unyielding position on wages, and that in advancing that reason, the company was not dealing with the union in good faith.' However, it seems to us the Board's inference in this respect is without substantial support, for no purely contingent wage increase, as such, appears to have been definitely agreed to by the union, though there is some testimony revealing that the union negotiator did suggest that if the company would grant an immediate wage increase embodying only a portion of the union's additional 25¢ an hour demand, it would agree to make the remainder contingent upon the company obtaining price relief.

"In any event, the company was not bound at its peril to grant a wage increase. The mere fact that a bona fide impasse in negotiations was reached is no convincing evidence of the company's unlawful refusal to bargain, for Section 8 (a) (5) does not require an employer's involuntary concession on any issue, or retreat from any bargaining position taken in good faith upon penalty of being held guilty of an unfair labor practice. Indeed Section 8 (d) of the Act as amended, specifically provides:

" '(d) For the purpose of this section, to bargain collectively is the performance of the mutual obligation of the employer and the representative of the employees to meet at reasonable times and confer in good faith with respect to wages, hours, and other terms and conditions of employment, or the negotiation of an agreement, or any question arising thereunder, and the execution of a written contract incorporating any agreement reached if requested by either party, *but such obligation does not compel either party to agree to a proposal or require the making of a concession . . .*'"

"We conclude that the Board's order based on findings that the company's unlawful refusal to bargain in good faith precipitated an unfair labor practice strike entitling the employees to reinstatement upon their unconditional application, instead of an economic strike resulting, not from the company's refusal to bargain, but from a bona fide stalemate on the wage issue, must be denied enforcement as not supported by substantial evidence on the record considered as a whole."

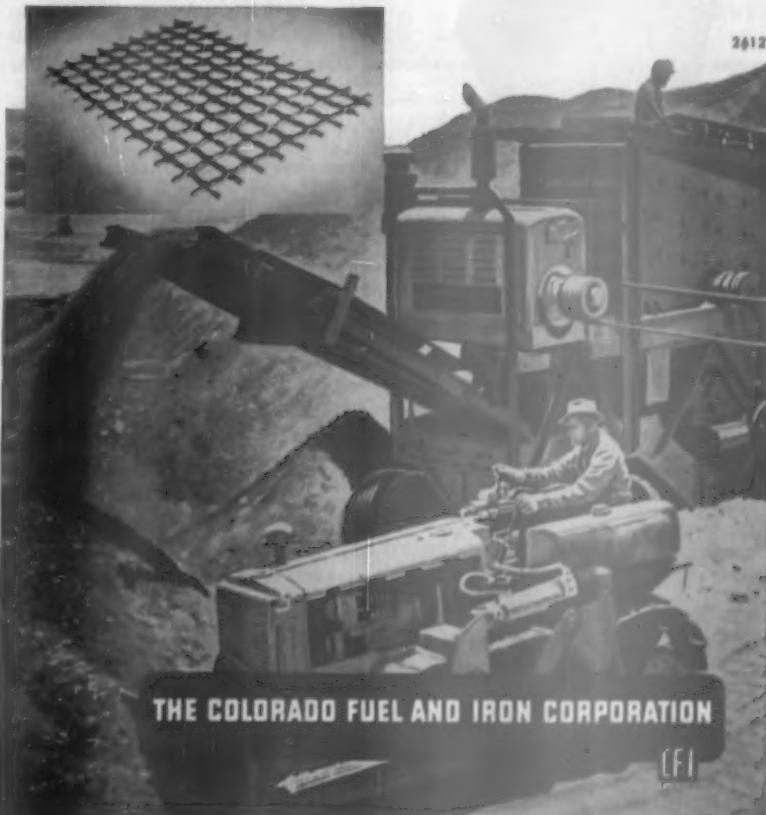
The N.L.R.B.'s finding of unlawful surveillance and threatening of the company's employees was also unworthy

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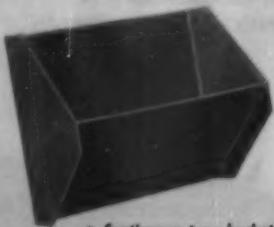
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110 Center St., Malinta, Ohio

## Labor Relations

(Continued from page 163)

of acceptance. The Court found, in essence, that the employer was entitled to use such judgment as the employment of a private detective agency in an emergency which threatened the safety of its premises and business. Particular objection was made of the activities of one of these detectives. On this point the Court said: "The highly reprehensible misconduct charged against this man, if actually committed, was without excuse or justification, but on the basis of this record [the Examiner's finding] we do not think it could properly be charged as an unfair labor practice to the company [employer]. The testimony is undisputed that all such [telephone] calls [to coerce employees] occurred at night when no responsible official or employee of the respondent was present at the plant; that the company never authorized or ratified any such misconduct, and in fact, that it was in direct violation of express orders to the detective's own employers [the private detective agency] who alone had the power to hire and fire him was responsible to the company for supervising and controlling him in the performance of his duties. It is going too far to hold the employer responsible for the unauthorized derailed actions of an employee of an independent contractor."

### Examiner's Report Unreliable

Summarizing the whole of the issues involved, the Court said: "Reverting now to our statement in connection with the Board's findings of interference and restraint that the Examiner's report and the Board's findings based thereon are not entitled to the usual presumption of correctness, we do not intend to reflect on the competency of the examiner on less provocative occasions. One witness was not proved to have deliberately given false testimony until after the

hearing closed. A careful comparison of the report with the evidence leaves us in no doubt that the examiner, relying on this testimony, was carried away with his justified wrath toward the detective, which he mistook for righteous indignation toward all of the respondents. We have heretofore called attention to the intemperate language of the report and to the Examiner's rejection of uncontradicted evidence for the respondent. This Court adheres to what was so well said for it by its present Chief Judge in N.L.R.B. v. Phelps, 136 F. 2d, 562, 563, 564: /

"... a fair trial by an unbiased and non-partisan trier of the facts is of the essence of the adjudicatory process as well when the judging is done in an administrative proceeding by an administrative functionary as when it is done in a court by a judge. Indeed, if there is any difference, the rigidity of the requirement that the trier be impartial and unconcerned in the result applies more strictly to an administrative adjudication where many of the safeguards which have been thrown around court proceedings have, in the interest of expedition and a supposed administrative efficiency been relaxed. Nor will the fact that an examination of the record shows that there was evidence which would support the judgment, at all save a trial from the charge of unfairness, for when the fault of bias and prejudice in a judge first rears its ugly head, its effect remains throughout the whole proceeding. Once partiality appears, and particularly when, though challenged, it is unrelieved against, it taints and vitiates all of the proceedings, and no judgment based upon them may stand."

"For that reason, that part of the Board's order based on findings of interference and restraint in violation of Section 8 (a) (1), along with all other parts, must be denied enforcement.

"Enforcement denied."

All this, of course, was an action brought by the old N.L.R.B., which

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has since been reconstituted, so it may be a matter of historical interest only. But, doubtless, many of the same Examiners remain on the staff, and if they make trouble under similar conditions, they should be reminded of this decision.

### MANUFACTURERS NEWS

Pangborn Corp., Hagerstown, Md., manufacturer of blast cleaning and dust control equipment, was recently presented a bronze plaque by employees in commemoration of its 50th anniversary.



Thomas W. Pangborn (left) founder and president and John C. Pangborn, first vice-president, view bronze plaque commemorating Golden Anniversary.

niversary and honoring the achievements of its founders, Thomas W. Pangborn and his brother John C. Pangborn. Participating in the event was Thomas W. Pangborn, who after 50 years as president still continues in active management of the corporation. As a keepsake of the anniversary, employees were presented bronze miniatures of the original plaque.

**Chrysler Corp.**, Detroit, Mich., has announced the election of Clyde C. Williams as vice-president of sales of the marine and industrial engine division. He joined the corporation in 1928, serving in various capacities until 1934, when he was named to the technical staff. He became a service engineer in 1939, and was appointed assistant director of service in 1942. During World War II he was assigned to the marine and industrial engine division. In 1946, he was appointed manager of marine sales, and in 1950 he was made general manager of the division, headquarters of which are in Trenton, Mich.



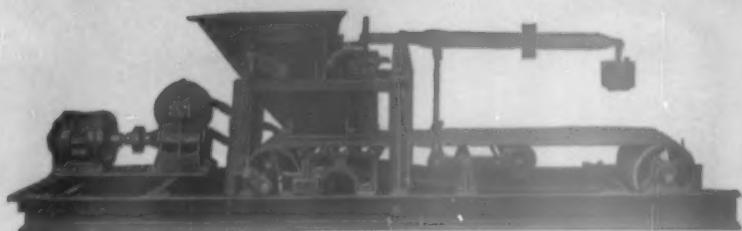
Clyde C. Williams

and industrial engine division. In 1946, he was appointed manager of marine sales, and in 1950 he was made general manager of the division, headquarters of which are in Trenton, Mich.

**Bergen Machine & Tool Co., Inc.**, Nutley, N.J., has established a "school of block making" offering free service to superintendents of existing block plants or newcomers in the industry, to study the art of block making at one or all of its block plants in the metropolitan area of Newark, N.J. Students may stay as long as they like in order to study the theory of the Bergen Vibrapan or Tri-Matic machines, how to adjust them, the art of concrete mixing, typical problems and their solutions, steam curing, stockpiling, truck loading and all phases of block plant operation.

**Atlas Powder Co.**, Wilmington, Del., announces the appointment of W. Clayton Lytle as general manager of the chemicals department. He was formerly general manager of the explosives department. Max E. Colson, formerly director of operations of the explosives department, has been named general manager of the department. Willie E. Collins, Jr., has been named assistant general manager of the ex-

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There's where the specialized services of your Chain Belt Field Sales Engineer can help you. His broad application knowledge...his familiarity with your problems...and the efficient performance of Chain Belt Products can help you find the right key to your problems.

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**for example:** If you're having "belt idler troubles," there's an answer in the complete Rex Idler Line. Impact idlers that cushion loading shocks, self-aligning idlers that lengthen belt life, troughing idlers that cut maintenance costs, are a few of the many that can help you.

Whatever your needs...drive chain, conveyor and elevator chain, complete elevators, belt conveyors, feeders, roller bearings and transmission, buckets or sprockets, you'll relieve those production pains by looking to Chain Belt. See your local Field Sales Engineer or write direct to Chain Belt Company, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

## CHAIN BELT COMPANY

District Sales Offices and Distributors in all Principal Cities

explosives department. He was formerly director of explosives sales and will be succeeded by George W. Thompson. Harry L. Most has been appointed director of explosives production.

**Marion Power Shovel Co.**, Marion, Ohio, announces the election of Milton T. Smith as a director, vice-president and general manager of



Milton T. Smith  
joined Marion and Osgood in 1946.

**L. A. Young Spring & Wire Corp.**, Bowling Green, Ohio, announces that R. C. Graves has been appointed director of sales of the Daybrook hydraulic division, manufacturers of power gates, dump bodies and hydraulic hoists. For the last five years Mr. Graves has served as sales manager of the Ben-Hur Mfg. Co., Milwaukee, Wis., where he organized and directed a national sales organization.



**Simplicity Engineering Co.**, Durand, Mich., has announced the appointment of Richard L. Henson as assistant advertising manager.

**Smith Engineering Works**, Milwaukee, Wis., announces the appointment of Arnold N. Wigle as New England representative for Massachusetts, Rhode Island, Maine, New Hampshire and Vermont, with headquarters at Wellesley, Mass. He succeeds E. G. Thibodeau who will continue with Mr. Wigle as a consultant. A graduate engineer, Mr. Wigle joined the company after serving as an officer in World War II. He started

in the shop and one year later transferred to the engineering department, subsequently becoming service and sales representative in Illinois, Pennsylvania, Ohio and New England.

**The Dorr Co.**, Stamford, Conn., announces that effective December 31, 1954, the Dorr Co. and Oliver United Filters, Inc., Oakland, Calif., will have merged under the name of Dorr-Oliver, Inc., with headquarters at Stamford, Conn.

**Hewitt-Robins, Inc.**, Stamford, Conn., announces that Arthur W. Fusold has been named assistant to the general sales manager of the conveyor and rubber divisions. He was formerly assistant manager of the commercial research department.

**The Ruberoid Co.**, New York, N. Y., has announced the appointment of Wilbur G. Noel as sales manager of the Salt Lake City district. He was formerly assistant to E. J. O'Leary, sales vice-president in New York.

**General Dynamics Corp.**, Bayonne, N. J., announces that Allan B. Collins has been appointed district manager of the Kansas City, Mo., area of the electro-dynamic division.

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 For Research Projects, too—the GILSON Screen is the answer to moderate-scale mass separation jobs.

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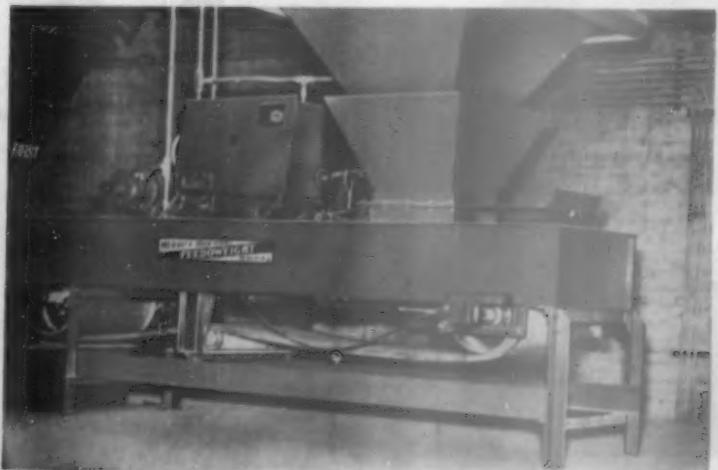
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It will pay every operator of heavy-duty equipment to investigate how "MANGA-TONE" N.M. can bring him substantial savings by lengthening the life and increasing the efficiency of his equipment, and not to mention down time for expensive equipment.

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At Dragon Comet Co., Northampton, Pa. RCA Metal Detector protects the hammermill crushers from hidden metal that can cause shutdowns. It is installed on new high-speed conveyor and inspects 400 tons of material per hour.

### -OUT THIS CAUSE... WITH AN RCA Metal Detector

Stray metal—like manganese steel dipper teeth that break off and damage your crushers—is no problem for the RCA Electronic Metal Detector. It finds the steel fragment even though buried under rock—and prevents it from causing trouble.

**Speeds from 25 ft. to 1,000 ft. per Min.** Wired to sound an alarm, spray-mark metal area, or stop a conveyor whenever trouble threatens, it inspects materials moving at speeds from 25 feet to 1,000 feet per minute. It's on the job, every moment of the time, probing the conveyor line for "saboteur" metals and alloys... both magnetic and non-magnetic.

**Thousands of Dollars in Savings!** No more burning out wedged tramp metal or replacing shafts damaged by stray metal pieces! By reducing down-time and production losses and saving high-cost machinery replacements, the RCA Metal Detector on your conveyor line will quickly pay for itself. Why not get the full story? Use coupon. Ask about the installation and service facilities of the RCA Service Company.



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Provides Steady Flow of Dry, Finely Ground Materials which tend to bridge in storage. Uses only small amount low-pressure air.

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signals change in level; automatically starts and stops filling and emptying equipment.

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# CONCRETE PRODUCTS

A SECTION OF ROCK PRODUCTS

CONCRETE UNITS · READY-MIXED CONCRETE



Casting room for Siporex concrete products at Skelleftehamn, Sweden

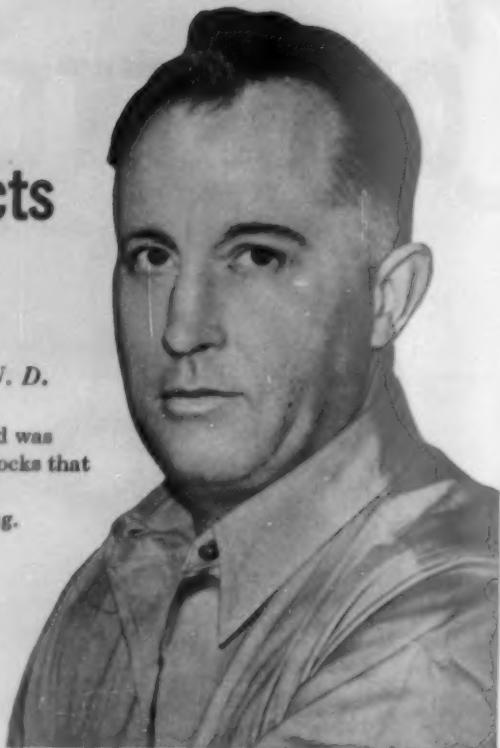
"I would like you to know

# what Duraplastic\* has done to improve my products and save money"

says KENNETH A. SCHULTZ  
*of Schultz Concrete Products Co., Minot, N. D.*

"For years I used different brands of cement, mostly 'regular,' and was troubled by poor feeding of the mix in the block machine, fresh blocks that would not stand the least jar when they were green, and a large percentage of culs off the racks when we cubed for yard stockpiling.

"The last two years I have used 100% Duraplastic and find the mix feeds through the machine without trouble. Duraplastic makes a mix that sticks together, almost eliminating breakage. And our culs in unloading and cubing are so few now that it would be hard to figure a percentage." Mr. Schultz also finds that blocks made with Duraplastic air-entraining portland cement have greater resistance to passage of water.



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Does Mr. Schultz's experience with Duraplastic suggest its use in your plant? Manufacturers find they get fewer culs and throwbacks . . . lower production costs . . . and better products that pay off in satisfied customers.

Good appearance is the extra salesman for your Duraplastic-made products. Users remark on their clean, true edges and corners. Face texture is richer, especially when harsh aggregates are used.



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It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

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# DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

Makes Better Concrete at No Extra Cost



CP-D-158R

# INDUSTRY NEWS

## Prestressed Concrete Bridge

THE FIRST CHICAGO-AREA prestressed concrete bridge was recently erected in DuPage County, Ill., on Mack Road, three miles south of West Chicago and one mile south of Alternate 30. The 3-pier, 2-lane, 120-ft. bridge was constructed of 36 pre-tensioned prestressed concrete reinforced beams, each 3 ft. wide, 17 in. thick and 30 ft. long. The beams were produced by Midwest Pre-Stressed Concrete Co., Springfield, Ill.

To form these beams,  $\frac{1}{4}$ -in.-dia. special high-strength strand, manufactured by American Steel and Wire Division, U. S. Steel Corp., are tensioned at 240,000 p.s.i. within forms. The strands are then encased in poured concrete. Bonding properties of the strand with hardened concrete keep the strands permanently stressed, transmitting the high strength of the strands to the concrete. An economical advantage of this type of bridge is that the beams not only form the structural members of the bridge, but the bridge decks as well.

## Cover Picture

ON THIS MONTH'S COVER is an illustration of Siporex concrete products plant at Skelleftehamn, Sweden, perhaps one of the most modern in the world. Siporex concrete is made by mixing finely ground siliceous sand with cement and aluminum powder. This mixture is cast in molds which air-harden for a period. The blocks are then placed in autoclaves. At the recent Southeastern Regional Meeting of N.C.M.A., a speaker from Sweden showed moving pictures of Siporex concrete block manufacture and explained the process. A report of this meeting appears in this issue.

## Concrete Plant

CLEVELAND BUILDERS SUPPLY CO., Cleveland, Ohio, plans to build a new \$750,000 concrete plant at W. Third St. and Jefferson Ave. in Cleveland, on property recently acquired for \$250,000. Construction of the new plant will enable the company to move its concrete operations from the present site at Columbus Rd. and Merwin Ave., which has been sold to the city.

## Home Builders Show

THE NATIONAL ASSOCIATION OF HOME BUILDERS will hold its 11th annual convention and exposition, January 16-20, 1955, at the Conrad Hilton and Sherman hotels in Chicago, Ill. The program will include discussions, demonstrations and technical sessions on new developments in building meth-

ods, merchandising, financing, market analysis, etc. "How to do it" features will be stressed in the meetings.

## Vermiculite Concrete Fire Test

THE VERMICULITE INSTITUTE reports that an unprotected steel roof deck, insulated with vermiculite concrete, withstood continuous fire exposure for 1 hr. 49 min., at temperatures up to 1830 deg. F.

The test slab consisted of 3 in. of 1:4 mix reinforced vermiculite concrete on a ribbed steel deck. A steel beam supported the deck in the center, and the beam was insulated with metal lath and vermiculite plaster. The slab was then loaded to 40 p.s.i., and subjected to temperatures in accordance with A.S.T.M. standard fire test.

Although the underside of the ribbed steel deck was completely exposed to the fire, the deck did not collapse and deflections were nominal, at the end of the test. This rigidity was attributed to the added structural strength of the ribbed steel deck, provided by the vermiculite concrete interlocking with the steel ribs.

Following the fire test, the assembly also withstood a fire hose stream test at 30 p.s.i. applied to the deck's underside for 2 min. 15 sec.

## Concrete Office Building

THE MARIETTA CONCRETE CORP.'s new one-story office building, at the Hollywood, Fla., plant, serves as a showcase for its concrete products. It is of contemporary design, constructed entirely of Marietta concrete building materials, including interlocking concrete block, precast concrete roof beams and poured concrete. The front of the building is of Marblox, one of the company's newer products. It is a marble-faced concrete block available in a variety of pastel and solid shades, for both exterior and interior use. The firm also has plants in Charlotte, N. C., Baltimore, Md., and Nashville, Tenn.



One-story office building of The Marietta Concrete Corp.'s Hollywood, Fla., plant is constructed of company products

MARIPOSA SAND & GRAVEL CO., Mariposa, Calif., has added a ready-mixed concrete plant to its sand and gravel operations. New facilities include a 150-ton capacity bin for three sizes of aggregate, a 250-bbl. cement silo for bulk cement, and a 5-cu. yd. weigh hopper for charging the transit-mixer trucks.

PRICE BROTHERS CO., Columbus, Ohio, was recently awarded the contract to supply nearly 23 miles of 30-in. and 24-in. prestressed concrete steel-cylinder pipe for a new water supply line at Jacksonville, Ill.

WESTERN CONCRETE PRODUCTS, Cadillac, Mich., has purchased controlling interest of R. K. Block & Supply Co., Saginaw, Mich. Ivan Birnson of the Cadillac firm was named manager of the Saginaw plant.

C. R. HEIDELBERG, general contractor, Jacksonville, Texas, has opened a ready-mixed concrete plant in Jacksonville, reportedly the first such plant in the area. Three transit-mixer trucks are operated from the plant.

DUNSEITH CEMENT BLOCK MANUFACTURING CO., was recently established at Rugby, N. D., by H. C. Knudson. Initial plant production is about 800 concrete block per day. Plant capacity is 1500 block daily.

J. C. POWELL CONSTRUCTION CO., Winfield, Kan., has opened a ready-mixed concrete plant just south of Winfield.

GOSPORT GRAVEL CO., Greencastle, Ind., has added a ready-mixed concrete plant to its sand and gravel operations. The new plant, which will serve the Cataract Lake area, is under the management of Malcolm Taylor.

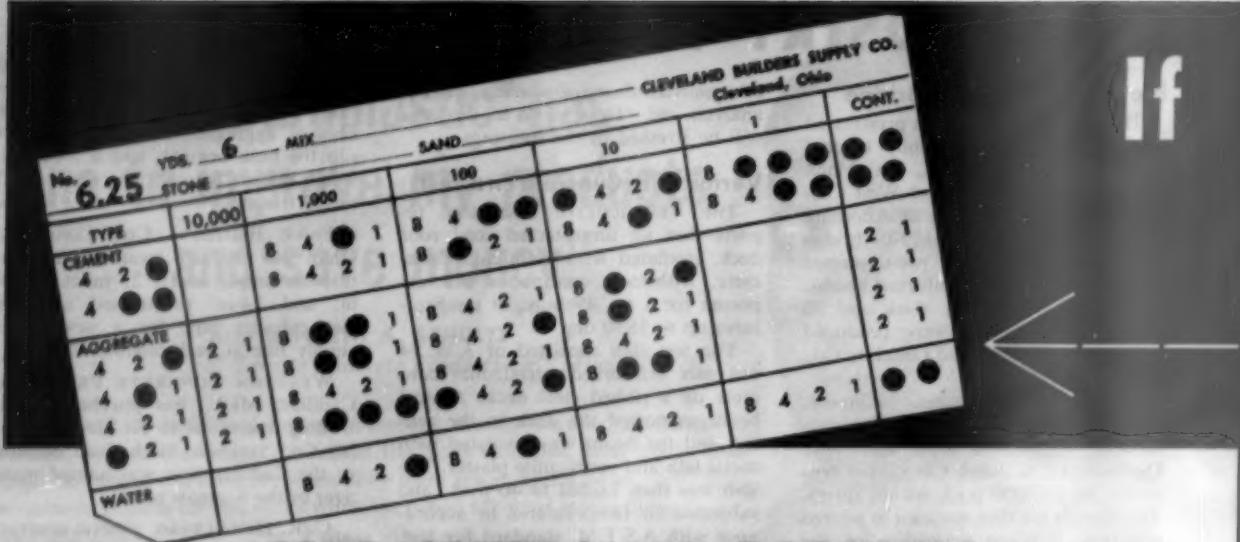
A READY-MIXED CONCRETE PLANT was recently opened at Stanberry, Mo., by Herb Allison, who is also owner and operator of Allison Concrete Products.

MEUSER LUMBER CO., Guttenberg, Iowa, has opened a ready-mixed concrete plant on a Milwaukee railroad siding adjacent to the company's present operations.

PRE-CAST STEP CO., Seattle, Wash., is now producing precast porches as well as steps, with both reportedly meeting excellent public acceptance. The company also operates a precast plant at Spokane, Wash.

Burgess-Brogdon Building Supply Co., owned by Robert A. Burgess, Jr., and J. C. Brogdon, Jr., has opened a ready-mixed concrete plant at Sumter, S. C.

WEST PENN CONTRACTING AND ENGINEERING CO., Jacktown, Penn., has established a ready-mixed concrete plant at Irwin, Penn.



## CARD-CONTROLLED BATCHING is here ... and BUTLER has it!

A punched card now can be your batching operator. The human element — the chance of error — is gone. No dials to set, no levers to pull. The punched card does it all in the new BUTLER XK1 Electronic Batcher.

Selection, proportioning, filling, weighing and discharge of 6 aggregates, 3 types of cement — plus water — are automatic and completely interlocked. Every discharged batch is correct — to a split pound . . . Another feature never before offered: The electronic controls also compensate for moisture in

sand or aggregates — and further, compensate for that compensation.\*

\*NOTE: To the mathematically minded: For example, 5% moisture in the whole is also adjusted for the correlative percentage in the adjustment. In other words, it integrates successive increments.

### Batching at 186,000 miles per second.

The BUTLER XK1 Batcher combines the accuracy and sensitivity of weight control, the flexibility of punched card systems and the speed of electronics, which is the speed of light.

### Virtually infinite batching selections.

From the holes punched in the card, the electronic control unit predetermines ingredient type, desired weight for each ingredient and the sequencing. An astronomical number of combinations of batch proportion is instantly available to the operator. A batch may be repeated at once or next year with equal ease. With the proper auxiliary equipment, bookkeeping, pricing and invoicing could also be handled from the same punched card.

### Permanent, legal record.

Those cards constitute a permanent file instantly accessible for repeat orders. Further, the cards are tamper-proof, legal records of the exact weights and proportions of materials in every batch. Successive batching of the same combination is simply a matter of touching the starting button after each cycle.

### Quick, easy maintenance.

Maintenance of the electronic equipment is so simple that any local radio repairman is perfectly capable. Moreover, unitized circuits permit any element to be replaced as quickly as a light bulb, so that it can be serviced at leisure.



# You Produce Concrete . . . TAKE a LONG, CLOSE LOOK at this CARD



## One man for a two-man job.

The control cabinet can be located in the dispatcher's office — at a distance from the plant — and the dispatcher can operate the batchers directly.

## New Horizons.

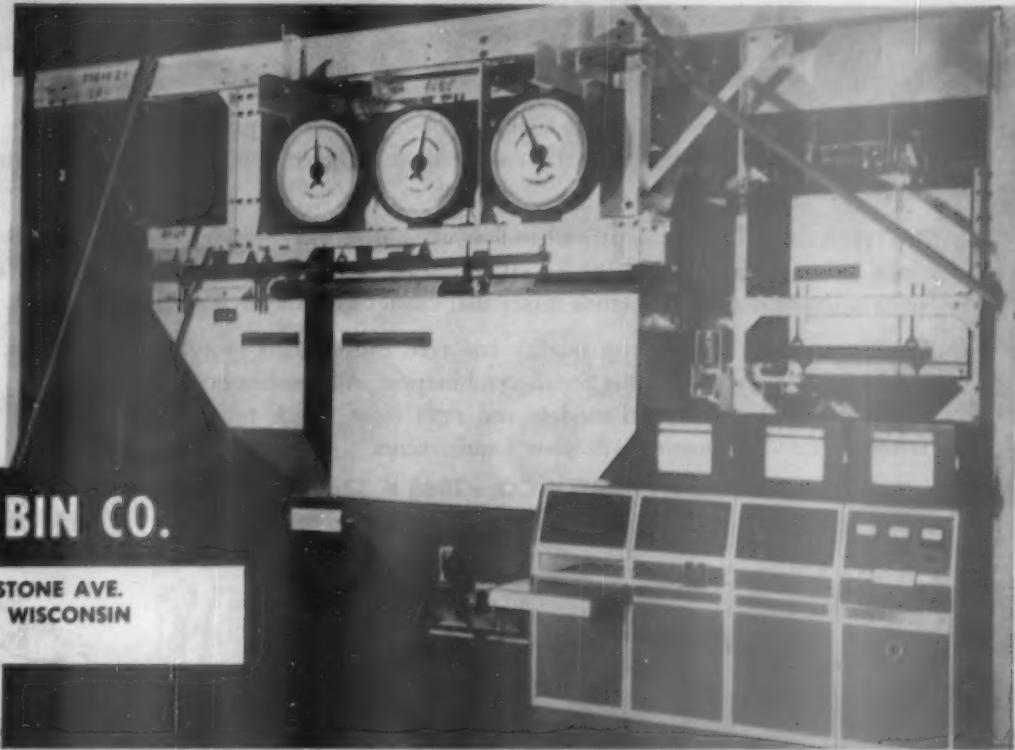
This great BUTLER development is of revolutionary importance to those in the concrete industry who are concerned with the complete integrity of their product and who wish to provide new horizons of economy, accuracy, flexibility, sensitivity and speed for the benefit of themselves and those whom they supply.

## As An Historical Note.

The first BUTLER XK1 Electronic Batcher was developed by the Butler Bin Company with its vast experience in batching problems together with Fairbanks-Morse and Company, Electronics Division, which has pioneered and established leadership in the electronics field. It has been installed at the Cleveland Builders Supply Company in Cleveland, O.

## You, too, can benefit.

Existing concrete plants can readily be converted to BUTLER XK1 equipment, no matter what make of your plant. Your Butler Engineer will be glad to supply all data — but please, make your inquiry on your letterhead.



**BUTLER BIN CO.**

993 BLACKSTONE AVE.  
WAUKESHA, WISCONSIN



**It's SMITH for  
QUALITY  
Concrete**

You can't find an easier way to assure Quality Concrete than this winning combination—

**SMITH TILTER** —World famous for mixing controlled quality concrete, at greatly reduced operating and maintenance costs — gives you more yards per truck, per day — and

**SMITH AGITATORS** — proved in fleet after fleet to charge faster than any other mixer and to discharge even the lowest slump concrete. Now with the 20° drum angle, Smith is the only open end truck mixer that carries TMMB rated agitator capacities.

If YOU want to deliver top quality concrete and still get more yards per truck each day, don't overlook this Smith combination. And remember — with more than TWENTY time-tested models and sizes from which to choose, there is a Smith Truck Mixer tailor-made to fit your requirements.

**THE T. L. SMITH CO. • 2885 N. 32nd Street • Milwaukee 10, Wis., U. S. A.**

Affiliated with ESSICK MANUFACTURING CO., Los Angeles, California



*Builders of Better Mixers for More Than 50 Years*

COLUMBIA  MACHINE

# "Thank You... MR. CONCRETE BLOCK MAKER!"

Your reception of our new Columbia  
12"-High machine has been tremendous!

It was only 12 months ago that Columbia announced a revolutionary development in concrete block machines...a new machine that will cast an unlimited variety of 12-inch-high shapes, as well as all standard shapes in 8-inch and 4-inch heights. In the ensuing year, the concrete block industry has justified our original conception by its enthusiastic reception of this machine. Aware of the great responsibility which this interest imposes upon us, we promise the continued production of superior machines, and the continued introduction of advanced equipment that will add to the prosperity and prestige of the entire concrete block industry.



FRED NETH, President  
COLUMBIA MACHINE

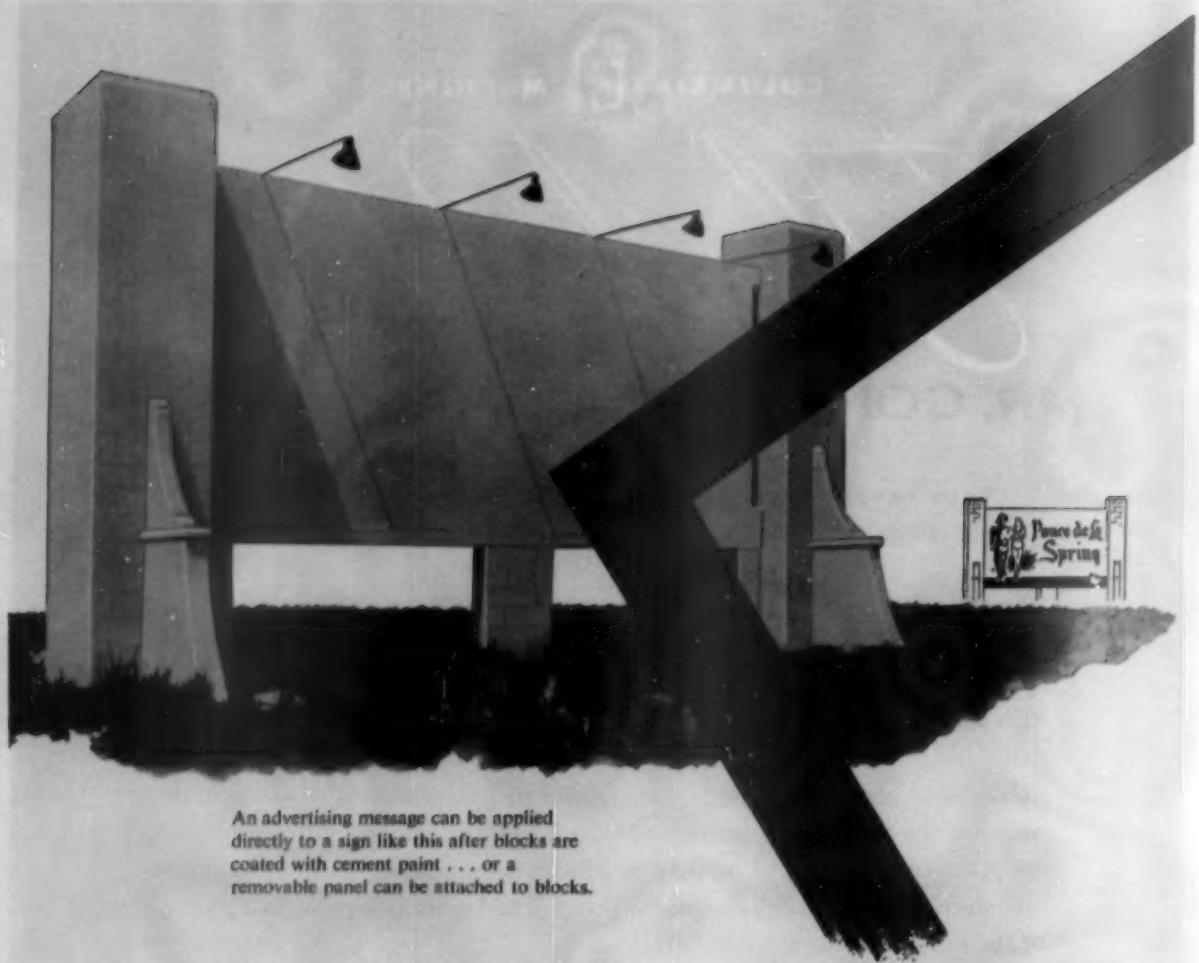


Columbia Machine will be represented at the NCMA convention in Cleveland, January 24, 25, 26 and 27 by many of its officers and by its sales and service representatives from nine regional offices. Meet them at Columbia's booths, Nos. 152, 153, 188 and 189; visit them informally in Suite 315 at the Auditorium Hotel.

Columbia 12"-High production includes concrete drain tile, water meter boxes, Roman tile, partition block, silo staves, flue liners; more than 240 shapes in regular 8-inch and 4-inch heights. Four to six cycles per minute on standard plain pallets.

*Columbia* MACHINE

MAIN OFFICE AND FACTORY: 107 S. GRAND AVE., VANCOUVER, WASH. • FACTORY BRANCH: MUKWAHAGO, WIS.



An advertising message can be applied directly to a sign like this after blocks are coated with cement paint . . . or a removable panel can be attached to blocks.

## an ill wind blows business your way!

Hurricanes and cyclones delight in blowing down ordinary outdoor signs, but not those constructed of concrete block.

They are also the answer to brush fires, gunshots, rust, and peeling—something advertisers long have needed.

New uses like this for concrete masonry units are *your* answer to competition and the need for more profitable sales. Take a long look about you. Somewhere a new use for concrete block is waiting to be fitted into your profit picture.

And your production picture will be better if it includes Lehigh Cement. Remember, there's a Lehigh Cement to help you produce quality units with any manufacturing process.



**LEHIGH**  
PORTLAND CEMENT COMPANY  
*Allentown, Pa.*

LEHIGH PORTLAND CEMENT  
LEHIGH EARLY STRENGTH CEMENT  
LEHIGH AIR-ENTRAINING CEMENTS  
LEHIGH MORTAR CEMENT

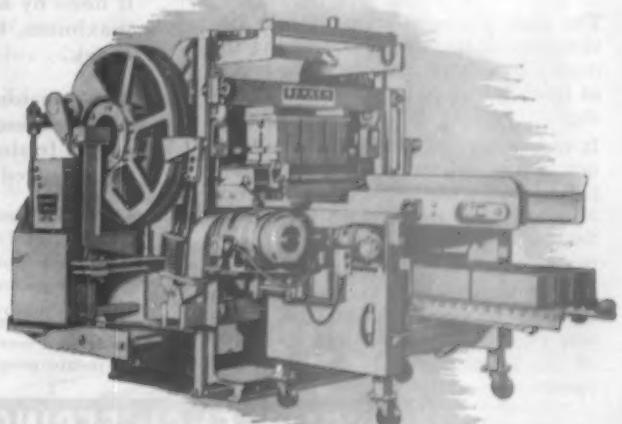
THE **BERGEN** ORGANIZATION

IS *Always at Your Service!*



*... and as near to you as your telephone  
through our Call "Collect" Policy*

Look for us in Cleveland,  
January 24-27, at the Con-  
crete Industries Exposition,  
Booths 130 to 135, where our  
**HIGH - PRODUCTION "TRI-  
MATIC"** will be on display.



**BERGEN MACHINE & TOOL CO., INC., NUTLEY, N.J.**



## This New Block Plant — a tribute to **OSWALT SERVICE**

Built as a result of Oswalt Service to the industry, this new property represents a significant achievement in block plant design. It reflects the knowledge and experience accumulated in more than 30 years of day-to-day operation.

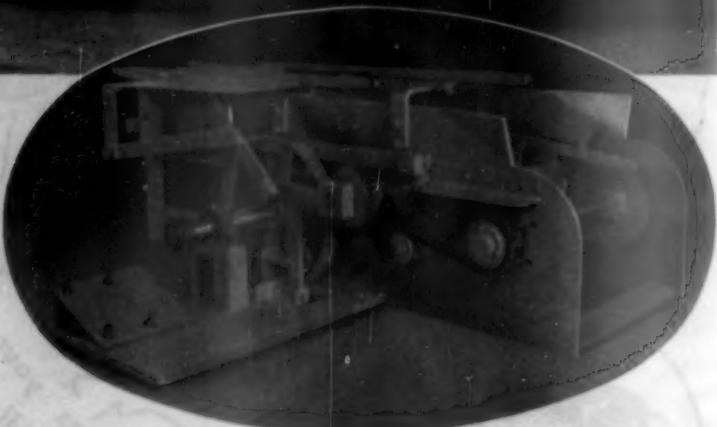
This plant is equipped and mechanized for the most advanced methods of block making. Here, the modern ideas in material handling and production, as developed by Oswalt engineers, are demonstrated and proved in actual practice.

The steady contribution of new developments to the block making industry by Oswalt Service is the result of teamwork and consolidated thinking.

It represents the combined results of our own engineering research and experience plus the help and suggestions of our many subscribers to Oswalt Service.

When you become a subscriber to Oswalt Service, you will profit from the exchange of ideas and the progress reports that keep you informed of the latest methods and improvements.

SEE OUR NEW BOOKLET  
FOR COMPLETE DETAILS



**OSWALT Heavy-Duty SHOCK-FREE BLOCK EJECTOR and FRONT-END PALLET FEEDER**

THIS combination unit is one of the numerous contributions to the block making industry by Oswalt Service.

It is designed for shock-free handling of green blocks to eliminate cracking and reduce culs to a minimum. The ejector mechanism removes the block as gently as if done by human hands. It starts slowly, accelerates to maximum, then slows to a stop . . . no jerk, jarring or shock.

This machine is an outstanding design for smoothness in operation as well as efficiency and durability. The pallet feeder at front end saves time and labor, and helps speed production.

**OSWALT Complete Service to Vibrapac operators includes:**

1. Shock-Free Block Ejector and Front-End Pallet Feeder
2. New Simplified Height and Density Control
3. Improved Vibration and Machine Changes for speed-up.

The equipment for these services is installed under supervision of Oswalt service men. Operation is tested and proven on the job to insure proper installation and guaranteed results.

**OSWALT ENGINEERING SERVICE CORP.**  
1335 Circle Ave., Forest Park, Illinois  
Phones: ESTebrook 8-3666 · FOREST 6-3898

WRITE FOR NAME OF  
OSWALT-SERVICED  
PLANT NEAREST YOU

**WE SHORTENED IT  
FOR BETTER WEIGHT DISTRIBUTION**



**BLAW-KNOX *Hi-Boy*  
TRUKMIXERS**

**haul more legal pay load on  
shorter wheelbase trucks**

● These Blaw-Knox 4½, 5½ and 6½ cu. yd. Hi-Boys are guaranteed to mix half a yard over the normal rated capacities, in accordance with TMMB standards! Think what that means to your profit tally when you divide the total pay-load per day by the number of trips!

It's one result of exclusive Blaw-Knox design. Locating the transmission at the side of the pedestal permits moving the mixer forward on the truck to utilize more of the legal load allowance of the front axle. The pedestal and flush water tank are combined to reduce weight by approximately half a ton, and lower the center of gravity of the loaded mixer. Engine located at left rear assures maintenance convenience and easy access. There are dozens of practical, profitable features you'll want to investigate.

Call your Blaw-Knox distributor today.

**BLAW-KNOX COMPANY**

**Blaw-Knox Equipment Division  
Pittsburgh 38, Pa.  
Offices in Principal Cities**

Ask about the  
**BLAW-KNOX**  
**Complete Ready-Mix Package**  
at the  
**NATIONAL CONCRETE MASONRY  
ASSOCIATION CONVENTION**

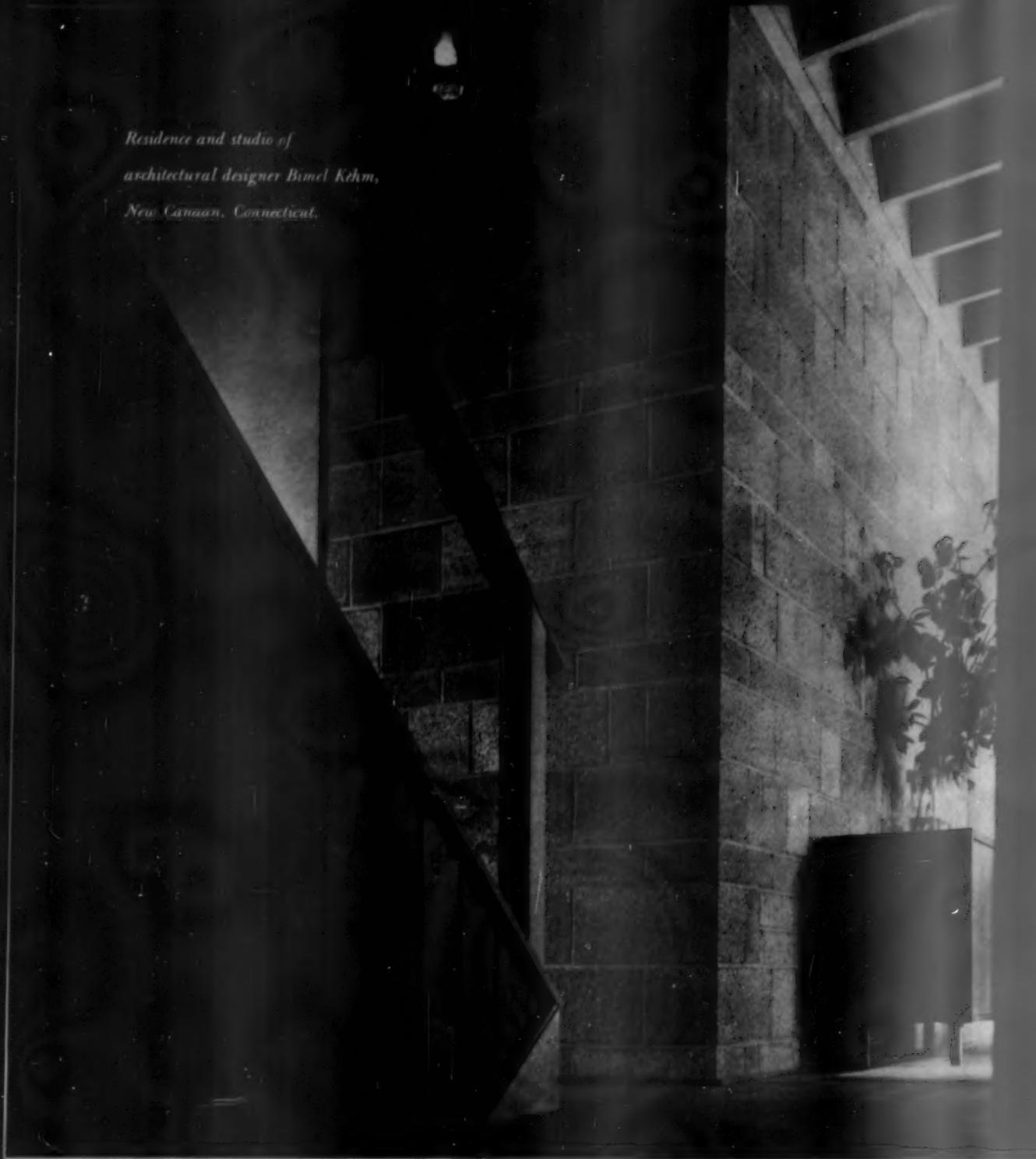
**January 24-27  
CLEVELAND, OHIO**



Get all your ready-mix equipment from one source to lick maintenance and parts supply bottlenecks! The Blaw-Knox "Complete Ready-Mix Package" includes Truck Mixer Loading Plants, Hi-Boy Trukmixers, Aggregate and Cement Batching Plants, Clamshell and Concrete Buckets... all the equipment you need.



*Residence and studio of  
architectural designer Bimel Kehm,  
New Canaan, Connecticut.*



More and more, people with discriminating taste and a knowledge of construction values are using exposed Waylite Masonry. It is remarkable for beauty . . . economy . . . thermal and acoustical properties. Complete data in Sweet's or, write Waylite Co., 20 N. Wacker Drive, Chicago, or Box 30, Bethlehem, Pa.

**WAYLITE** Masonry Units

Worth coming to  
Cleveland to see...

# Jaeger's new standard 3½-4 yd.

- Hauls 3 to 3½ yd. legal payloads on single axle trucks
- 4 to 4½ yd. legal payloads on lightest tandem axle trucks
- with unique low operating cost resulting from new features and highest strength construction



We will demonstrate this new 3½-4 yd. open end loader, and our latest 5½ yd. sealed end loader, at Booth 23-30, Concrete Industries Exposition, Cleveland, Ohio, January 24-27.

1: Up to 50% fuel savings. 4-cylinder engine operates within maximum torque range.

2: Heavy duty drive chain. Same as on biggest mixers. No breakdowns.

3: 3-speed transmission, another Jaeger first. 3 mixing speeds, 3 discharge speeds provided by standard, long-proven Warner industrial

transmission. Drum speeds from 1½ to 15 rpm are all at economical engine speeds of 800 to 2000 rpm.

4: Instant, exact drum control by single lever.

5: New "Quick-Lock" chute carriers. Save operator both time and effort.

6: Improved "Swing Away" chute. Swings clear for direct discharge into hoppers.

7: "Quick-Way" water injector. Eliminates water bells and packing glands.

8: 25% larger discharge blades. Fastest discharge of low slump concrete.

9: Improved type open-end loader. Steeper angle and bigger throat for fastest charging.

10: Standard equipment includes full-length mudguards, wash-off hose, 3-piece 12 ft. chute, fuel tank and hopper inspection platform.

If you do not plan to attend the Cleveland Exposition, ask your Jaeger distributor to give you complete information on this new model or write for Specification TM35.

## THE JAEGER MACHINE COMPANY

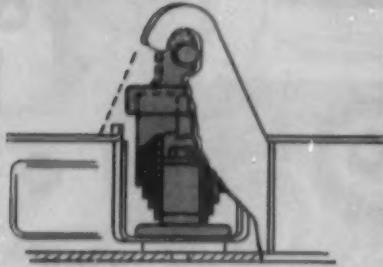
603 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • LOADERS • PUMPS • CONCRETE MIXERS • PAVING MACHINES

CONCRETE PRODUCTS, January, 1955  
A Section of ROCK PRODUCTS

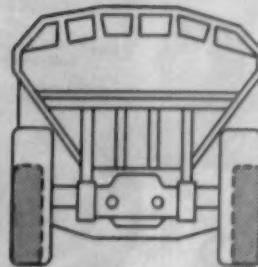


## Check all these important Dumper®



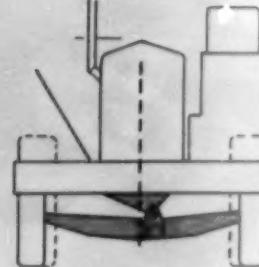
### Smooth ride

Heavy, snubber-type spring is mounted between Dumper main frame and the steering axle. Shock-absorbing action gives plenty of "cushion", takes jolts out of rough, off-road travel. Easy on operator and machine.



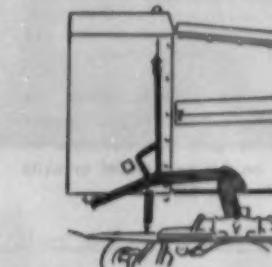
### Tires track in direct line

Wider, heavier steering axle puts Dumper steering wheels in direct line with big drive wheels. Tires track in the same path. There's less rolling resistance — better traction in soft ground and over rough haul roads.



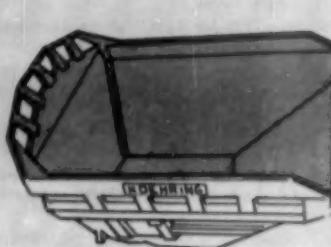
### Off-set pivot on axle

Pivot point on steering axle is offset from center line  $3\frac{1}{4}$ " toward operator side of machine. There's no sag, even with unbalanced load. Steering axle oscillates 21°, keeps twisting strains out of main frame.



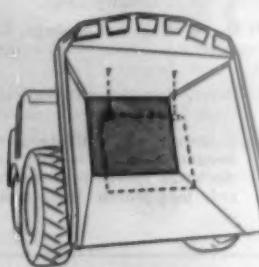
### New body-latch, dump lever

Body latch for 1-second gravity dumping is simple, trouble-free. Latch is engaged by a single hook, mounted on the chassis frame. Dump lever is located inside the cab, in an easy-reach position at the operator's left.



### Streamlined, all-steel body

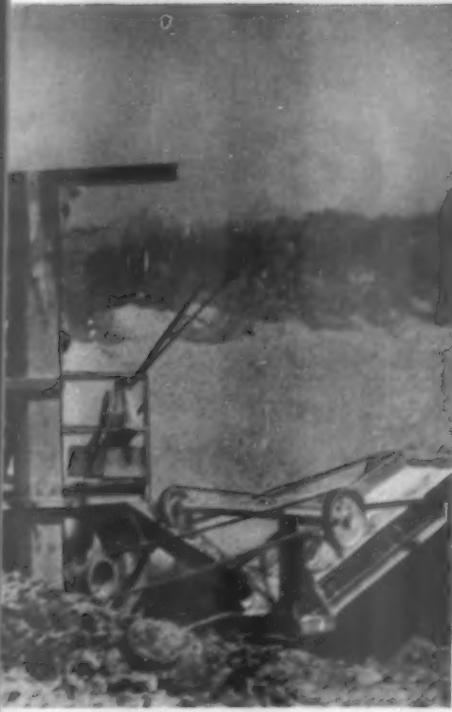
Inside is free of bulges or ledges. Top edge is box-beam constructed. Sides, ends are ribbed with 3 and 6" channels. Double-plate bottom is lined with multiple steel beams. Note ridge bar added to rock-guard teeth.



### Bolted or free-swinging pan

Heavy steel kick-out pan is  $\frac{1}{2}$ " thick. Pan can be bolted to body floor for extra protection when loading rock. Remove bolts, and pan has free swinging kick-out action, breaks suction when dumping sticky loads.

CK-630



## advantages

Take another look at the latest-model Koehring 6-yard Dumptor shown here. It has some important features worth checking . . .

Notice how heavy rubber-spring on steering axle cushions road shocks, yet retains Dumptor's unique advantage of no spring maintenance. There are no leaf springs. Big shock absorbing drive tires eliminate need for springs on drive axle. Alignment of drive wheels with steering wheel adds to efficiency of no-turn shuttle hauling — another basic Dumptor advantage.

Instant gravity-dumping is controlled by simple body latch and new dump lever arrangement. Notice, too, the new streamlined all-steel body. Even with all this heavy-duty strength, Dumptor still has more than 6 h.p. for every ton of loaded weight — accelerates fast, climbs 24% grades fully loaded. See your Koehring distributor for more facts.

### KOEHRING COMPANY

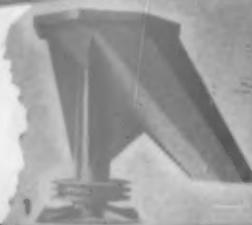
Milwaukee 16,  
Wisconsin



Subsidiaries:  
JOHNSON - PARSONS  
KWIK-MIX

### HAVE YOU OVERLOOKED ANY OF THESE IDEAS?

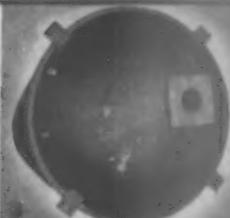
There are places in your batching and mix plants where these low-cost Johnson accessories can profitably increase efficiency on the storage and batching of aggregates and cement . . .



**Vertical Distributor**  
Saves transportation time, supplies raw materials to mixer. It turns and holds into position by ground-level control.



**Pump Compressor**  
Supplies 7 cu. ft. of air pressure per minute to operate cement silos and bins. Has 15-pound limit-relief valve.



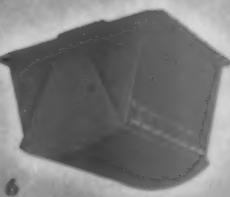
**Aeroline Fittings**  
Properly spaced in storage silos and tanks, keep bulk cement fluid and free flowing at all times.



**Air Gauge and Signals**  
Automatically register "fill" levels of ingredients or cement. They are dust-proof. Operation is automatic.



**Rotary Plug Valve**  
Controls flow of cement from silos into screw conveyors. It's also used as a fill valve in cement buildings.



**Aggregate Fill Valve**  
Single-flange, radial-type, heavy-duty design for quick, positive sealing with large aggregate. Hydraulic pressure fails.



**Discharge hopper**  
Will carry loads for long distances, even over rough terrain, or haul millions of gallons. All-welded, weather tight.



**Elevator Discharge Chutes**  
3 types, 7 sizes of buckets for aggregates and cement. Long-life steel chain has carbonized bushings.



**3-Way Elevator Discharge Valve**  
is a flip-type chute which directs flow of cement from elevator into bin storage tank, or silo.



**Dump Gate**  
is heavy radial chain gate for stockpiles, railroads, ships, boats, or barges. It tilts, opens and locks in any position.



**Gear Assemblies**  
Gears, chilled-iron cast iron with heavy steel hubs and bearing keys. Also, 12-in.

Mail to: C. S. JOHNSON CO., CHAMPAIGN, ILL.  
(Koehring Subsidiary)

Send us details  
on items checked: 1 2 3 4 5 6 7 8 9 10 11

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

DIVISION \_\_\_\_\_

STREET \_\_\_\_\_

CITY, STATE \_\_\_\_\_

RP 21



... NEW

NEW

# NEW

CHALLENGE

# Pacemaker\*

TRUCK MIXER

with

37

exclusive and outstanding features

OUTPERFORMS ALL OTHERS

1. MIXING BLADES MADE OF HEAVY 3/16" HIGH TENSILE STEEL
2. SECONDARY DISCHARGE FINS FOR SMOOTH, EVEN DISCHARGE
3. AUTOMATIC THROTTLE RETARD
4. CHALLENGE "MIXOMETER"
5. TWO-SPEED OPERATION
6. LARGER DRIVE CHAIN, OFFSET LINK TYPE
7. PROVED WORM GEAR ANGLE DRIVE
8. "JET FLOW" WATER SYSTEM
9. "JUST RIGHT" DRUM ANGLE
10. RUGGED BOX TYPE FRAME
11. FULL LENGTH FENDERS AND MUD GUARDS
12. LARGER DIAMETER DRUM HEAD
13. LARGER REAR OPENING
14. UNOBSTRUCTED REAR OPENING
15. DOUBLE DRUM HEAD
16. FRONT DRUM SECTION MADE WITH 3/16" STEEL PLATE
17. REAR DRUM SECTION MADE WITH 3/16" STEEL PLATE
18. NEW "ANTI-RATTLE" CHUTE LOCK
19. FOOL PROOF SPRING STEEL CHUTE LATCH
20. HAND OPERATED OR ELECTRIC HYDRAULIC CHUTE HOIST
21. BETTER WEIGHT DISTRIBUTION, SHORTER CENTER OF GRAVITY
22. LARGEST NICKEL ALLOY STEEL DRUM SHAFT IN THE INDUSTRY
23. CAB CONTROL
24. CHOICE OF STANDARD INDUSTRIAL ENGINES
25. HEAVY DUTY CONTINUOUS WATER PUMP
26. "L SHAPE" DISCHARGE BLADES
27. SIMPLIFIED CONTROLS
28. ONE PIECE FOLDING CHUTE
29. REVERSE MIXING FINS
30. EASY TO READ SIGHT GLASS GAUGE
31. HEAVY, ONE PIECE ALL CAST STEEL MAIN BEARING CARRIER
32. EXTRA LARGE SELF-ALIGNING MAIN ROLLER BEARINGS
33. PRECISION AUTOMATIC WELD CONSTRUCTION
34. "FAST FLOW" OVERHEAD LOADING HOPPER
35. PROVED STURDY LOADING HOPPER SUPPORT
36. STANDARD AUTOMOTIVE TYPE TRANSMISSION
37. INTEGRAL FRONT DRUM SUPPORT AND ANGLE DRIVE MOUNTING



**COOK BROS.**  
EQUIPMENT COMPANY  
3334 San Fernando Road, Los Angeles 65  
Telephone: Cleveland 6-3151



VALUE STANDARD OF THE INDUSTRY



One of the well-attended meetings at the Southeastern convention

## Business Conditions Analyzed By Southeastern Masonry Producers

• New architectural treatments, masonry cements, precast structural concrete, technical developments and promotion — highlights of St. Petersburg, Fla. meeting

TECHNICAL DEVELOPMENTS, promotion and all other of the more important aspects of the concrete masonry industry were covered well at the eleventh annual Southeastern Regional Meeting of N.C.M.A. held November 22-24, 1954, at St. Petersburg, Fla. The program was unusually informative and well-organized, and attendance was more than 300 which established a new record. In addition to members from all the southeastern states, there were representatives present from Illinois, Iowa, New Jersey, Ohio, Missouri, Michigan, Texas, New York State, Washington State, Arizona, Pennsylvania, Maryland, Arkansas and Colorado. From outside the United States there were three from Canada and, in addition, Bengt Lundgren from Stockholm, Sweden.

There were three business sessions and there was plenty of entertainment provided. All at the meetings were guests of the Florida concrete products manufacturers and their suppliers of equipment and material at a get-acquainted hospitality hour preceding the meeting. Dick Bothwell, columnist and cartoonist of the St. Petersburg Times, provided the entertainment at a luncheon which was followed by an afternoon and evening at

the Tides Hotel and Bath Club, Redington Beach. A barbecue on the beach and a water carnival and swim show wound up the evening.

The second afternoon provided a bus trip over the new Sunshine Skyway Bridge to Bradenton and Sarasota where the Ringling Museum and other points of interest were visited. The Sunshine Skyway Bridge provides a crossing over lower Tampa Bay and the total crossing, of 15 miles, is the longest of its kind in the world. The high level ship canal bridge and its approaches is the longest prestressed concrete bridge in the world. That evening was set aside for a banquet with floor show and dancing.

George W. Katterjohn, president of the Southeastern Concrete Masonry Association, presided for the opening session. After an invocation by Dr. Frank P. Anderson, St. Petersburg, and an address of welcome by W. F. Davenport, manager of the St. Petersburg Chamber of Commerce, the sessions started off with a report by Secretary-treasurer W. R. Ireland, Atlanta, Ga. R. L. Kerr, Charleston, S. C., and Leon K. Camp, Columbus, Ga., were presiding officers for the ensuing two sessions.

According to a spot check made by

calling upon members in the audience for comment, business for the concrete masonry industry throughout the southeast is generally at a high level and the outlook ahead is for continued good business. There are a few exceptions such as in western Kentucky, where a large government project has largely been completed and business has dropped off as a result.

Conditions continue to become more competitive and cases were reported where other materials have made inroads in competition with concrete masonry. School building continues to brighten the immediate outlook through much of the area, but the use of concrete masonry for the building of homes has not kept pace. Producers are intending to push that market harder. The general feeling is that the industry must work harder in order to maintain a high volume of business. There is some evidence of price cutting.

Sam Bailey, Jackson Stone Co., Jackson, Miss., reported that there were good possibilities for business in his area provided that producers work together in stronger promotion of concrete masonry. The building of schools is an attractive market. Recently, S. H. Westby of the P.C.A., director of engi-



Left to right: M. E. Rinker, president of N.C.M.A., Rinker Materials Corp., West Palm Beach, Fla.; Gen. W. Katterjohn, president of Southeastern Concrete Masonry Association; E. W. Dienhart, executive secretary, N.C.M.A.; Fred W. Reinhold, Anchor Concrete Products, Inc., Buffalo, N.Y.; and Gilbert E. Olson, Builders Equipment Co., Phoenix, Ariz.

neering R. E. Copeland of N.C.M.A., and George W. Katterjohn, Katterjohn Concrete Products, were speakers at a meeting in Jackson to which architects were invited to hear the story of concrete masonry.

John E. Kelley, Smith Concrete Products, Inc., Kinston, N.C., reported that business was off by 20 percent for the first eight months of 1954. However, the hurricane "Hazel" left in its wake plenty of business for producers in the area.

Fred C. Dent, Southern Concrete Masonry Association, New Orleans, La., which is a recently organized group, told of efforts being made to promote greater use of concrete masonry in Louisiana. One of the first steps was a luncheon meeting at which 175 architects were present to hear a talk by R. E. Copeland of N.C.M.A. which stimulated much interest. Presently, more concrete block than ever before are appearing in architects' plans, particularly for commercial building.

Home construction is lagging principally because of the high prices for land. As a result of this lag, a meeting for home builders was called to hear Gilbert E. Olson, Phoenix, Ariz., tell what has been done in his area. Mr. Olson's firm has been doing a tremendous job in gaining acceptance for concrete masonry and he had many beautiful colored photographs to show of outstanding construction in the Phoenix area which stimulated much interest. The Veterans Administration and the F.H.A. in Louisiana have been opposed to concrete masonry homes. Mr. Dent stressed the desirability of industry-wide cooperation whereby there can be interchange of ideas and accomplishments between producers from different areas, such as the talk by Mr. Olson in the case of Louisiana.

Forrest Ladd, John A. Denies Sons

Co., Memphis, Tenn., said that his business was holding at the same level as the past two years, without benefit of having a state association thus far. Steps were to be taken for such an organization at this meeting, it being realized that more educational work must be done. Competition from clay tile is coming back strongly. Considerable individual promotion work has been done. It is expected that greater use of concrete block will be made in school building and in local government building.

R. C. Page, Page-Groves Co., Lexington, Ky., reported that business was down somewhat in eastern Kentucky but that it was the reverse in central Kentucky. Reporting for western Kentucky, George W. Katterjohn said that business has fared badly due to the near completion of the billion dollar atomic project in the Paducah area. That project had, of course, stimulated all business far beyond normal.

D. Williams, of the Owensboro, Ky., plant of Katterjohn Concrete Products Co., however, had a much more optimistic report. There have been several large housing projects let in that area recently. In addition, concrete masonry backup will be used in a \$2 million college project and for much county and city school building, including enlargements of existing schools. Volume of sales in 1954 will just about equal the high 1953 volume.

James N. Maples, president of the Georgia association, said that clay brick is the principal competition. The local P.C.A. office has been doing effective work and the producers are actively promoting their product in order to meet the competition. There is a great deal of school construction and the industry is gaining an increasing amount of business through architects. Concrete masonry for home con-

struction is lagging and a strong effort is being made to develop that market.

R. L. Kerr, Tidewater Concrete Block Co., Charleston, S.C., reported that business was good in his area except for a price-cutting situation in Columbia, S.C.

W. D. Gillis, Gillis Block and Supply Co., Ft. Lauderdale, Fla., said that dollar volume of business was down 20 percent the first five months of 1954 due to a price reduction. However, business has started to accelerate and looks good ahead into 1955. His plant is operating night and day. Competition is keen but, he said, it is clean.

Jack Dargh, P.C.A., Atlanta, Ga., commenting on the general outlook, expressed the opinion that business will continue good for at least five to ten years. He was encouraged at the cooperation among industry members and the recognition being given to merchandising as the all-important activity to be stressed.

#### Engineering Developments

In an excellent talk on "Engineering Developments in the Manufacture and Use of Concrete Block," R. E. Copeland, director of engineering, N.C.M.A., Chicago, Ill., stressed the growing competition to be faced by the industry and the resultant need for more technical development and scientific research in the industry. He believes it of utmost importance to learn more about good and poor block, and good and poor structures, as necessary to the job of promotion.

High pressure steam curing was discussed briefly by Mr. Copeland and he referred to the exhaustive compilation of material on the subject prepared by H. Gonnerman for the N.C.M.A. Among advantages achieved by high pressure steam curing are reduced shrinkage which, he said, is about one-half as great as for moisture units or those steam cured under atmospheric pressure. Also, compressive strengths are achieved in 12-14 hr. equal to the 28-day strengths obtained by conventional methods of curing, provided the optimum of pulverized silicious material is incorporated into the mix. Other advantages are reduced efflorescence, lighter colored units and, when unsound aggregates are used, the normally expected delayed expansion will take place during the curing.

Mr. Copeland told of another comprehensive study underway by the N.C.M.A., which will cover design, layout, installation and operation of high pressure steam curing plants. This project is financed by 55 interested member companies. There were eight such plants built in 1954 and there are at least six more in the planning stage. This, he pointed out as sig-

nificant, because there were no installations in the 1935-1945 period and only two or three built in the 1945-1952 period.

A study has been made in plants using a two-phase system of curing wherein units are first subjected to curing by low pressure steam, to develop sufficient strength for handling, and then are cubed and placed on cars for autoclaving. The economic advantage is that an 8-ft. 1-in. x 100-ft. autoclave will then handle 5000 units whereas its capacity would be half as great if conventional racks be used. This practice permits minimum capital investment in autoclaves and savings in piping and valves. There is indication that the same benefits result as would be accomplished by handling fresh machine-made units directly into autoclaves.

Mr. Copeland then discussed the importance of the industry keeping abreast of codes and making itself heard before important code organizations. Speaking for competitive industries in the building industry, he said that lumbering interests have eight men working on code matters and that the steel industry has two men assigned to it. N.C.M.A. devotes 1½ months a year to code work and there is need for more of it, he said.

He called attention to a new A.S.T.M. specification for lightweight aggregates which includes tests governing properties not considered before, including staining, popping and shrinkage of the resulting concretes. Since 90 percent of a concrete block consists of aggregate, more attention should be paid to its quality and gradation. He speculated that 10 or 15 percent of the money spent for cement could be saved by improvements to the gradation of aggregate which could amount to between 7 and 10 million dollars annually.

Mr. Copeland mentioned that the Corps of Engineers is getting much better performance from masonry structures since it tightened its requirements. He cited a report, "Requirements for Concrete Masonry Construction," made by the Bureau of Standards for the Corps of Engineers which covers control joints, bond beams, reinforcing, dry block, etc., as an example of large purchasers developing their own specifications. The Corps used an estimated 100-150 million concrete masonry units the past two years.

Mr. Copeland predicted that the industry will face more attempts by large purchasers to write their own specifications and he sees a threat in this development. The danger as he sees it, is that, in attempts to eliminate defects, purchasers may go overboard in seeking remedies. They may require



Left to right: W. A. Neff, Neff Concrete Products Co., Danville, Ill.; Jay Ehle, Cleveland Builders Supply Co., Rocky River, Ohio; R. A. Utiger, Cinder Concrete Products, Inc., Denver, Colo.; and Horace Bush, Multiplex Concrete Co., East Orange, N. J.

water-proofing and other materials and specify more than is necessary to gain the desired results. Such a development would raise construction costs and react unfavorably in competition.

The N.C.M.A. has started a far-reaching program of inspection of buildings in an attempt to determine if bond beams and control joints are proving effective and to find out their cost. This is a very difficult project because of the lack of historical information on many structures. Thus far, 115 buildings have been inspected.

The industry has been good to companies engaged in it, said Mr. Copeland, and may continue if it is recognized that there is a need to take a long look at the future. He was specific in calling attention to competitive influences that must be recognized. On the West Coast, he said that tilt-up construction has become a serious threat particularly in large warehouse and commercial structures which are the most attractive markets for concrete masonry. The move is spreading eastward into other states, pointing to the fact that concrete masonry producers more and more will have to contend with a precast industry.

The structural clay products industry is out to regain volume at the expense of concrete masonry. That industry's Research Foundation has acquired 17 acres of land near Chicago for establishment of a research center. Research has been put on a permanent basis and the industry has a \$1,250,000 program outlined for a 5-year period. SCR and jumbo brick units are becoming serious competitors in some areas. Use of SCR clay units has already ruined the back-up market for concrete masonry units in Salt Lake City, Utah. Another factor is that some 75,000 prefabricated houses were built in 1954. Mr. Copeland's concluding statement was that the in-

dustry must become more technically informed if it seeks to develop its potential market.

#### Masonry Mortar

Since the concrete masonry industry is concerned with the end results in terms of quality and appearance of concrete masonry structures, an excellent talk on masonry mortar by C. E. Wuerpel, technical director, Marquette Cement Manufacturing Co., Chicago, Ill., was of considerable interest.

A weakness in specifications for cement-lime mortar mixtures, in Mr. Wuerpel's opinion, is that specifications for quicklime do not make a distinction according to the amounts of MgO and CaO. Type S and type N hydrated limes are defined, on the other hand, and there is great difference in the properties of the two materials. The type S hydrate specification is more restrictive as to permissible uncombined MgO.

According to specifications, mixing of mortars should be for a minimum of three minutes in a drum-type batch mixer but hand mixing may be used for small work where there is written approval and procedures to be followed. However, hand mixing should not be done, said Mr. Wuerpel, because of air entrainment which is a direct function of mechanical mixing.

It is increasingly important, he said, that cementitious mortar have good ability to retain water when dry concrete block are being laid and he said that masonry cements have greater water retentivity than cement-lime mixtures.

Mortars having the higher compressive strengths are not necessarily the best to use, he said, for different classes of construction. The B grades are better as a rule for regular types of construction whereas the A grades of higher strength are particularly for

reinforced brick construction and for structures designed to withstand hurricanes, etc.

Mr. Wuerpel advocates the use of masonry mortar of the type now being widely manufactured by the portland cement industry, stressing that it is a packaged, standardized product that does not require blending with lime. These products are made by intergrinding about 50 percent portland cement clinker with 50 percent limestone. The clinker supplies the cementitious binder and the limestone contributes plasticity. Addition of an air-entraining admixture increases the plasticity and water retentivity. He told of tests underway by the portland cement industry at the Bureau of Standards which are for the purpose of learning how further to improve these products.

#### High Early Strength Cement

A panel discussion on the subject "High Early Strength Cement — Its Place in Concrete Block Manufacture" brought out that this premium priced portland cement does have advantages to offer.

W. D. Gillis, Gillis Block and Supply Co., Ft. Lauderdale, Fla., described his experience with high early strength cement, which started in March, 1954. Before discussing results, he first briefly described his operation and the type of unit manufactured, stressing that the kind of aggregate used is a factor in compressive strengths obtained and in surface texture. He believes it necessary for each producer to experiment with his own materials in order to determine the merits of high early strength cement for each application.

A coarse texture unit is preferred in his area and stucco is then applied. This requires that units be made from a mixture on the coarse aggregate side. A proportion of 50 percent Ojus rock ( $\frac{1}{2}$  in. minus) and 50 percent screenings is used. The coarse aggregate weighs 2250 lb. per cu. yd. and the screenings have a weight of 2500 lb. per cu. yd. with an F. M. of 2-2.3. It is a high  $\text{CaCO}_3$  content aggregate.

Block machinery consists of a Stearns No. 15 and a Besser Supervibrapac. Mixing is done in a 4-bag (15 cu. ft.) mixer. Block are taken from the machines and stored in a shed for 12 hr., where they are subjected to fog spraying. Then they are removed to the yard and stored for further curing with spraying for about two days in the yard. Practice has been to add an air-entraining agent into the mixer.

Using the 4-bag mix, with regular cement, the yield was  $23\frac{1}{2}$  units (8-x-8-x-16) per sack, which had a compressive strength of 850 p.s.i. after 10 days of air curing. Yield with high early strength cement, using identical

aggregates, is  $33\frac{1}{2}$  units per sack, of 1150 p.s.i. compressive strength.

High early strength cement costs 23 cents more per bag than standard portland cement. Saving in cost is 0.3 cent per unit and it is believed that an added 0.2 cents can be saved by increasing the yield to 35 block per sack of cement. Use of high early strength cement has greatly reduced breakage in handling and has permitted earlier delivery of good quality units which has proved important when there are heavy demands for units in stock.

Due to excessive breakage of units at a new plant of Rinker Materials Corp., West Palm Beach, Fla., the use of high early strength cement was first tried as an expedient until the steam curing kilns could be completed, according to P. C. Smith. Block could not be handled successfully by fork lift truck in the yard without waiting two days. A number of test batches were run with high early strength cement which showed that cement to be cheapest per 1000 p.s.i. Equal or better results were obtained in 28 days when using 74-76 percent as much cement, and 80 percent higher one-day compressive strengths are being obtained with the premium cement. Units may now be stockpiled without chipping and they can be handled safely by fork-lift truck the same day.

#### Florida Development

According to J. P. Taravella, executive vice-president and general manager of Coral Ridge, Fla., large Ft. Lauderdale development company, the future ahead is very promising for concrete and concrete products in that area. At least 35 percent of the homes in his company's new development are of concrete, or \$18-\$24 million worth. That development has added \$60 million to Ft. Lauderdale's tax rolls in the last 10 years and is the largest concentration of new homes in the \$20,000-\$40,000 price class built in the United States during that period.

Additional land has been acquired for further development and Mr. Taravella predicted that the entire ocean front from Palm Beach to Miami will become one metropolitan area within the next few decades. During the past ten years vacant property sales alone have totalled to \$15 million which indicated improvements of \$75 million, and there are 24 hotel sites on a single mile of ocean front at Fort Lauderdale.

#### Cost Accounting

W. F. Lynch, certified public accountant, Cleveland, Ohio, in a discussion of cost accounting for block manufacturing, outlined a set of basic forms devised for Rinker Materials

Corp., West Palm Beach, Fla. There are five forms used, comprising a daily batch report, a report of block cubed, daily block production report, summary of block production and a monthly concrete block plant operations report.

The mix or mixes of cement and aggregates for the day is recorded on the daily batch report. The time of each batch is noted and indicates the number of batches for the day. Unit costs for materials are based on the number of batches run for each type of block. Total cost of all materials is divided by the number of batches run for the entire month, and this average batch cost is applied against the number of batches for each type to arrive at the total cost of materials for that type.

The block plant foreman reports the quantity of good block cubed for the day and the number of culs produced, on the report of block cubed. Only the good block produced are considered in arriving at the unit cost of block. The number of kilns and racks is indicated on the form for convenience in calculating the culs for the day.

Form number three, the daily block production report, is computed by the accounting department from the first two forms and provides a quick analysis for use by the foreman and company executives. It gives a quick check of the daily efficiency and indicates how the rate of production is keeping pace with sales.

Form number four, the summary of block production, is for the convenience of the accounting department in accumulating the daily block production in accordance with size and type and the number of batches required for each.

The total types and sizes produced for the month from the totals on form number four are recorded on the monthly block plant operations report (No. 5). The total material cost as determined by multiplying the average batch cost by the number of batches for each type is found and this material cost is divided by the total units for that type to produce the unit material cost.

Equivalent units are based on a standard production of three block to a pallet. If six block are produced to a pallet the equivalent is one-half, and if two to a pallet, it would be one and one-half. The total equivalent units for all types is added for the month and divided into the total labor cost for the month to determine the labor cost for each unit of equivalent. This unit for equivalent is multiplied against the equivalents for each type block to determine the total labor cost for that type and it is then divided by the ac-

tual number of units to arrive at the unit labor costs.

The same procedure based on equivalent units is used with respect to the distribution of manufacturing expenses. Total material costs as accumulated from the daily block production report and the variance with the actual figures as shown by the books (purchases plus opening, minus closing inventory) is indicated on the monthly report. A statement of all costs, materials, labor and manufacturing expenses is included in this report together with the average costs for all equivalent units produced for the month and the average costs for that unit for the year to date.

Mr. Lynch stressed the need for consistency in accounting procedure in order that accurate cost comparisons may be had from year to year. Rinker makes comparisons for as far as five to six years back and finds that to be important. Costs like rent are kept separately from operating costs since they would distort the unit cost picture should there be substantial changes in volume of production. Mr. Lynch distributed copies of the Rinker forms and encouraged others to exchange their systems of forms for the benefit of each other.

#### Architectural Treatment With Masonry

S. H. Westby, manager of the cement products bureau, P.C.A., Chicago, Ill., presented an illustrated talk on architectural treatment of walls using concrete masonry. He said that a new era in the application of concrete masonry, featuring many attractive architectural patterns, is opening much larger fields for application, when used for exposed interiors of schools, offices, homes and other structures.

Such applications not only have beauty and give architectural expression to interiors but eliminate the need for expensive plastering and, he said, the bricklayers are extremely interested in the possibilities.

Mr. Westby described the use of exposed concrete masonry interiors in the P.C.A. laboratory and offices in Chicago and how these applications are being used as practical demonstrations to be viewed by architects and builders. The P.C.A. masonry features careful jointing and tooling as well as many patterns to create pleasing effects, which have proved amazing to architects and builders. One-third of the P.C.A. regional offices have been remodelled along these lines thusfar and others will follow. A number of concrete masonry producers have brought groups of architects and builders to Chicago to inspect the P.C.A. construction with good results, and Mr. Westby suggested that others do



R. E. Copeland, director of engineering, N.C.M.A., addressing the meeting

the same or bring such groups to regional P.C.A. offices that have been remodelled.

He then showed a number of colored slides of actual interiors taken over the country to illustrate the great variety of patterns, textures, colors, and overall effects that can and have been achieved. These slides certainly showed progress in recent years. Among applications shown were the use of 8- x 8-in. units laid diagonally, staggered and shadow effects, colored ashlar patterns of different textures, vertically scored effects, the use of split block, basket-weave patterns, 4-in. courses with white mortar joints, variations of 8- x 16-in. block faces with 4- x 4-in. squares between, curved effects to accentuate ceiling lines, vertical stacking to create the illusion of height, the use of chimney block on edge for unusual architectural effect in homes, the use of 16 x 16-in. faces in large buildings with 4-in. courses between, tooled as well as struck horizontal joints and a great variety of color effects.

These four-color photographs are in process of being reproduced and bound in the form of books which will be available for purchase from the P.C.A. in about three months. They should be the clincher in convincing architects that concrete masonry is adaptable to architectural imagination.

Mr. Westby concluded by stressing the need for maintenance of high quality standards and, through active promotion, inspiring architects and builders with enthusiasm.

#### European Precast Concrete

Observations on the use of precast concrete in Europe as a result of a 6-week trip early in 1954 were the subject of an extremely interesting illustrated talk by Thor Germundsson,

manager of the structural and railways bureau, P.C.A., Chicago. The trip was made for the study of precast concrete and structural uses particularly, covering England, Denmark, Norway, Sweden, Holland, France and Germany.

There is a growing interest in the use of more and more precast structural concretes in Europe, both precast in the plant and cast at the jobsite, depending upon freight charges, said Mr. Germundsson. Cost is not the only factor in the selection of precast concrete, he said, and many types of units and structures are custom-built. He was impressed with the high efficiency in precast plants throughout Europe but witnessed much inferior performance on job-site work. Material handling in plants is highly developed and workers are paid on the basis of piece work. Generally speaking, precast concrete is of very high quality and many European firms are interested in setting up licensees in the United States.

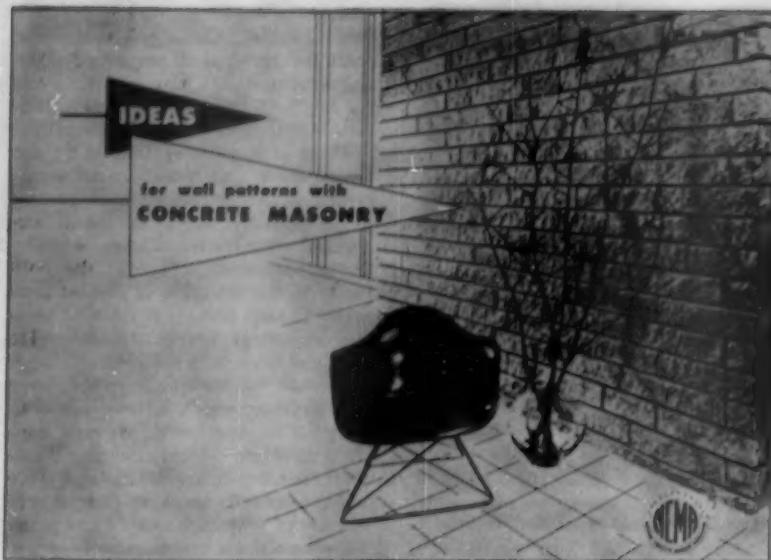
Among types of units and structures observed and illustrated were precast roof trusses and columns, jobsite cast gables for churches and precast, prestressed bridges of short sections assembled on the site. These bridges are made of 4-5-ft. sections post-tensioned together and are considered excellent for use in inaccessible locations.

Airplane hangars in London are being built of prestressed girders cast in plants or on the site. Large industrial plants in Denmark are being constructed of jobsite-cast girders. Many outstanding examples of factory-made wall panels with cast-in-place windows were observed. Vibrating tables and external vibrators, as used in Denmark, resulted in excellent and intricate shapes made from "negative" slump concrete with all free water removed. Precast stairways are largely used throughout Europe and they are of excellent workmanship, with integral colors, and are ground to a beautiful finish. In Holland, there were excellent examples of precast sculptural concrete. Schools were observed in England, made of short elements post-tensioned together into the structures. Much labor was required but labor is cheap.

Large multi-story buildings with precast beams bolted into cast-in-place concrete were observed in many localities and, in Oslo, Norway, precast panels for large multi-story housing projects featured no-fines concrete for interior walls. Sweden showed most progressiveness in the building of both low and multi-story buildings for housing projects.

Precast concrete railroad ties are widely used in Denmark and Germany, including prestressed ties. There are four plants making nothing else in

(Continued on page 199)



"**Ideas for Wall Patterns with Concrete Masonry**" is an attractive 16-page booklet with some excellent ideas for architects and builders which won an award from the American Institute of Architects

## PROMOTION

# Material That Sells Concrete Products

**L**EADERS IN THE CONCRETE MASONRY INDUSTRY look for, and are prepared to face, keener competition than they have had for many years. The general feeling is, however, that benefits of cooperative promotion and technical research through the National Concrete Masonry Association and the Portland Cement Association will more than offset increased aggressiveness of competing products.

Sentiment, among most block producers is that anybody who thinks that the concrete masonry industry has become soft and fat during the lush years when business came easy, is in for a surprise. They point out that with few exceptions the men who have made a success of the operation of block plants have known years of the hardest kind of work during which they have learned that success does not come easily. These men, they say, recognize the responsibilities that go with success and have accepted them.

Some liken the \$400,000,000 concrete products industry to a youthful giant who previously has not realized his own strength. Now fully grown up there is plenty of evidence that this vigorous industry can be depended upon to not only hold its present volume but to continue to lead in the building material field.

Although block production figures are not yet available, the volume of concrete masonry units produced and sold during 1954, appears to have been about equal to the 1953 volume, according to reports and estimates from various states.

### N.C.M.A. Promotion Program

The most ambitious promotion and advertising program ever undertaken by the National Concrete Masonry Association was launched in May, 1954, when complete promotion and merchandising kits were sent to the more than 750 members of the Association. An important part of the material was a "Promotion Calendar," to guide block producers in the use and timing of each element in the promotion program.

The basic purpose of this calendar, it was explained on the calendar, "is to give N.C.M.A. members an over-all view of the 1954 promotional program, both on the national and local level, and to point up, in easy-to-visualize form, the most effective ways of tying in with this program to get the maximum benefit for your own sales effort. Properly used, this calendar should make it easier for you to plan, coordinate, and follow up on your local promotion activities, and

- National Concrete Masonry Association has prepared and distributed advertising and merchandising material that has helped members to sell products in a highly competitive market

By HUBERT C. PERSONS

will help you spend your advertising and merchandising money more effectively.

"While this N.C.M.A. Promotion Calendar is intended as a through-the-year guide, the local promotion aids have been broken down into several kits for scientific promotions, each of which will be sent out just prior to

suggested timing for start of promotion."

This Promotion Calendar carried the schedules of N.C.M.A. advertising in two architectural magazines, one building publication, and one magazine of general circulation devoted to housing. The schedule also included a contractor's publication and a trade paper devoted to masons and bricklayers.

The merchandising kits also included suggested copy for sales letters to be used to answer inquiries or to stimulate interest in concrete masonry houses, home improvements, garages and farm buildings. There were also suggested radio scripts and spot announcements for use on both radio and television.

Some 8000 inquiries resulting from the advertising were serviced with appropriate literature from the N.C.M.A. general office in Chicago. During the year Association members also purchased and distributed more than 50,000 copies of various booklets and folders included in the promotion kits.

One of these 1954 publications, a three-color, 16-page booklet called, "Ideas For Wall Patterns With Concrete Masonry," won an award from the American Institute of Architects in a building products literature com-

petition. Another of the promotion kit pieces, a 36-page, two-color brochure entitled, "Design and Construction of Lintels for Concrete Masonry Buildings," won an honorable mention.

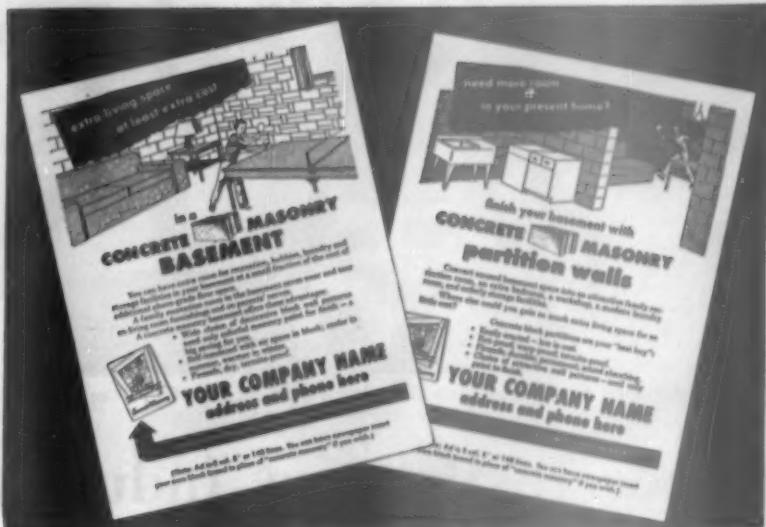
### Exhibit is Outstanding

One of the most effective promotion projects in which N.C.M.A. participated during 1954 was the building and display of an outstandingly attractive room of exposed concrete masonry as part of an "Arts of Daily Living" exhibit sponsored by House Beautiful Magazine at the Los Angeles County Fair in September.

In commenting on the room, House Beautiful editors suggested that it demonstrated "how a common building material can be made exciting enough to be the inside finish." A further comment characterized the room as "an excellent example of integration in design," and said "It produces unity and character—the highest qualities design can inspire to."

### Benefits From Research

R. E. Copeland, N.C.M.A.'s director of engineering, believes that concrete masonry producers should be aware of



Samples of newspaper advertisement suggestions from the Basement Promotion kit sent to members by N.C.M.A.

the greater aggressiveness of competing materials but points out that there are many developments working in favor of increased demand for concrete block.

Mr. Copeland told of intensified promotion and research activities of the clay tile industry. He also said that in some areas use of the Tilt-Up method of casting concrete walls had cut into the concrete masonry market in the industrial building field. Strong competition in some territories, he said, has resulted from the use of cast-in-place concrete for basements and foundations.

On the favorable side, Mr. Copeland said block producers are beginning to get substantial benefit from research and development work on concrete masonry carried out by the N.C.M.A. and the Portland Cement Association. The establishment of additional sources of lightweight aggregates is having a favorable influence, Mr. Copeland believes. Producers, he said, are making better block than ever before and are paying more attention to curing and dryness specifications. He believes that with a considerable increase in covered storage facilities, block producers are giving block a longer period for drying. This has resulted in fewer complaints about cracking.

Eight large producers of concrete masonry have added autoclave equipment for high pressure steam curing since the latter part of 1953, Mr. Copeland said. Quite a number more are planning to install such additional equipment before the end of 1955.

The dryness specification of the U.S. Corps of Engineers, limiting absorption to 30 per cent is now being followed by a number of architects. The Corps of Engineers' requirement for control joints and longitudinal reinforcement in some types of concrete masonry construction is also being

(Continued on page 193)



First page of the Promotion Calendar, a six-page folder distributed by N.C.M.A. It is designed to provide members with a guide to effective advertising and merchandising and present an over-all view of the 1954 promotional program of the Association



Interesting display of products at the Irions Concrete Block Co., office

- Cost-cutting practices, capacity increases and quality control methods also contemplated to meet competition from within and outside the industry

By BROR NORDBERG

## Concrete Masonry Industry Stressing Development of New Markets

THE UNEXPECTED LARGE VOLUME OF CONSTRUCTION in 1954, which exceeded all predictions, reflected in a better year for the concrete masonry industry than was anticipated. Indications are that total volume of the industry may have exceeded the all-time high of 1.85 billion 8-in. equivalent units which was attained a year ago.

Residential construction held up better than expected, with more than one million housing starts, and commercial, industrial and public building of all sorts were maintained at high levels. Farm building was the weak spot due to reduced farmer income and will carry over as such into 1955. There likely will be a very small decline in industrial construction but all other classes, residential and commercial in particular, will more than offset these declines and add up to a construction total to break all records.

In spite of increased volume of sales in 1954, competition was much keener than a year ago both between concrete masonry companies, because of new concerns in the business and greatly expanded capacity of more established producers, and with competing materials. There is an increasing tendency to price cutting and to granting concessions of many kinds to purchasers, which is a threat to the stability and welfare of the industry in many areas.

Replies to our letter requesting comments on business and competitive conditions, the development of new markets, and plans for plant and product development, indicated that 71 percent of the companies had increased volume of business in 1954 compared with 1953. Reports of in-

creases in the 10 to 25 percent range were most frequent where volume had grown. A few had increases of 40 to 55 percent. Seventeen percent had a volume of sales equal to that of 1953, and 12 percent had reduced volume. In the latter group there were a number represented who depend much on farm markets, which have declined with reduced farm income.

Prices remain fairly stable with 57 percent reporting the same level as in 1953. Whereas there were 23 percent who had higher prices, they were balanced off by 20 percent who reduced their prices due to severe competition on a price basis. Price increases were slight, to reflect increased costs of doing business, whereas reductions were as high as 10 percent in highly competitive metropolitan markets which have excess production capacity.

Seventy-two percent anticipate increased sales in 1955, 22 percent expect to maintain 1954 volume and only 6 percent believe there will be a reduction in volume. New products and development of new markets contributed to 1954 expansion and will be a considerable factor in 1955.

Increased public building including schools and a trend upward in commercial building are anticipated in many areas. Some producers in industrial areas who had reduced sales in 1954 are expecting more business in that category. The residential market for concrete masonry has not been up to expectations for many, and will be the focus for more attention in 1955. California producers are increasing their markets substantially by promoting the idea of concrete masonry fencing and garden walls, and many pro-

ducers over the country have added great numbers of sizes and types of units to increase their sales. Others have extended their market areas.

Producers were almost unanimous that competition has stiffened, from the inroads of competitive materials in part but, more importantly, within the industry. Price cutting between producers is much more prevalent than a year ago which is unfortunate since that practice is the first step to failure and adds nothing to the total acceptance of concrete masonry. It serves to pave the way for deterioration of quality and provide an opening for competitive materials. Instead, the industry should be girding to meet the competition of other materials that will surely grow in intensity.

The SCR block developed by the clay products industry is putting up a strong bid in the residential and backup fields and is starting to get results. Products like Jet-crete on metal lath, larger windows and glass block are taking up more and more of the wall area in schools and other buildings. Tilt-up construction is a serious threat on the west coast and is spreading eastward. There were an estimated 75,000 prefabricated homes erected in 1954.

These competitive trends must be countered by strict adherence to quality standards and good construction practices, by the introduction of new products and ideas to improve beauty and appearance and through aggressive sales promotion and education. Many companies are doing just that. They have materially stepped up their sales efforts by adding salesmen for lead follow-up and more personal contact,

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**CLEVELAND, OHIO**

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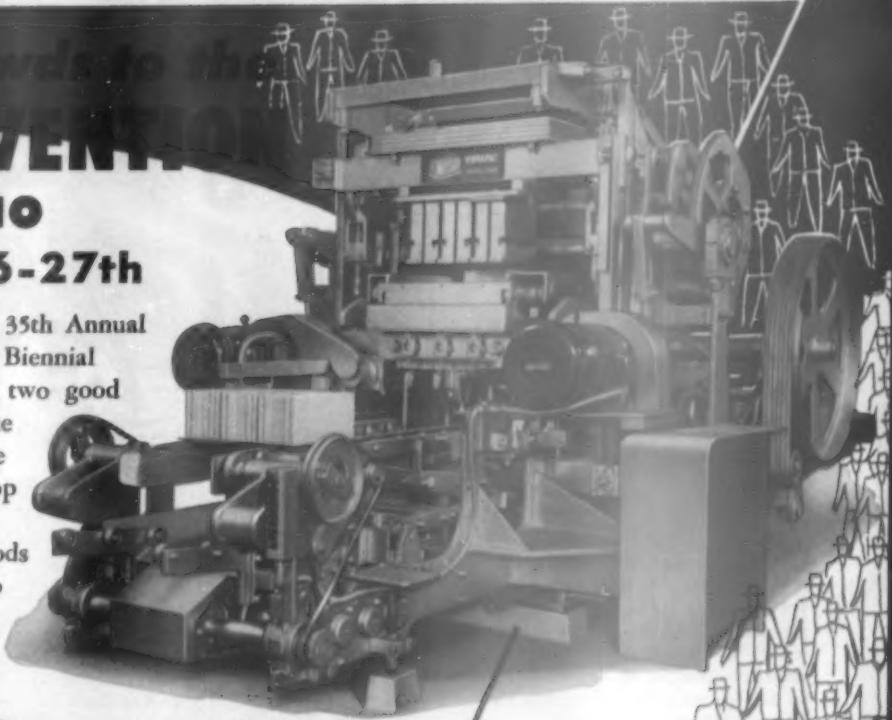
Again Cleveland beckons you! The 35th Annual Meeting of the NCMA and the 9th Biennial Concrete Industries Exposition are two good reasons why you should head for the big city on Lake Erie. You'll have the opportunity to rub shoulders with top men in the Industry . . . to learn of new processes and production methods . . . and above all, to discover how to make PREMIUM Block, FASTER and more PROFITABLY.



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At Cleveland, be sure to see the products of this versatile block making machine—modern 3 core and 2 core block units . . . BES-STONE — the Split Block with quarried stone appearance . . . Soffit Filler Block for floors and roofs . . . and a host of other masonry units. See new attractive designs made with VIBRAPAC block . . . designs that add charm and beauty to building interiors or exteriors.

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# BESSER COMPANY

BOX 133 • ALPENA, MICHIGAN, U.S.A.

*Complete Equipment for Concrete Block Plants*



**Precast concrete** columns, girders, L-I-B joists and Channelcrete deck made by Arnold Stone Co., Greensboro, N.C., for the new Morton Co. plant

they are stressing customer relations and are enlarging their advertising effort and they are improving their overall service. A good number are to make installations for curing and moisture control in an all-out effort to lick the problem of volume change. More mechanization is to be employed to cut costs in the plant in order better to meet price competition and there will be many new handling devices to cut the costs of delivery at the jobsite. Many more specials are to be kept in stock at some plants in order to give better service.

A large percentage of the industry is preparing to add new products. Split block heads the list. Among others mentioned were precast fireplace units, patio slabs, septic tanks, concrete pipe, roof slabs, joists, bevel block, man-holes, beam block, chimney block, prestressed concrete, ground face block, colored face block, control joint block and pilaster block. Some producers continue to make and stock more sizes and shapes of masonry units while others are stressing markets for standard units that have largely gone neglected.

The year 1955 will see much plant modernization and considerable expansion. A number of high capacity block machines will be installed, according to our correspondents, and there will be many installations to improve curing. Several have indicated a desire to convert to high-pressure steam curing. Several large plants are scheduled for rebuilding, to enlarge capacity and reduce labor costs, and some will be better located with respect to their markets. Covered storage and greater storage areas will be installed in some plants. Testing will

be emphasized by some in efforts to produce units of more uniform quality.

Among handicaps, poor collections and price cutting were mentioned most frequently. Several have customers who expect too much service such as the unloading and piling of block within basements at exact spots so that the masons have little or no handling to do. Among other handicaps listed were cement shortages, competition with sub-standard products, poor quality of labor, lack of good quality lightweight aggregate, taxes that make it impossible to depreciate new equipment as fast as it wears out, and the many reports required by government.

Typical of the more interesting comments from a few of the letters are the following:

**ILLINOIS:** "Prices in 1953 remained stable with sales off about 6 percent. In 1954 we have met competitive prices and have increased our sales about 7 percent, with profits remaining stable."

"We added Split-Rock in 1951 which has been a good item. Lincoln Log fireplace units were added in 1954. Patio slabs has been a very good seller. Behind the promotion of these items, we have used 13 weeks of T.V., extensive newspaper advertising and a display in front of our office. An advertising program and top notch salesmen are being employed in our very competitive area. The use of Super-Lite unloaders has been a successful tool, also."

"Competition from other than concrete producers has not been a factor. We believe with block and Split-Rock for veneer, we are making the inroads. No further plans are contemplated for

expansion at this time. We are continually trying to improve our products. This year we switched from 3 core to 2 core in our 10 in. and 12 in. sizes. We started using type III cement. In the next year or two, we hope to add another type of precast roof slab. We are now making the waffle type blocks and soffits."

**CALIFORNIA:** "Volume of business with us was up about 13 percent and prices about 5 percent higher than in 1953. I expect about the same increase next year."

"Sixty-five percent of our products are new products serving new markets for concrete units, and we definitely contemplate new products. Our market in concrete specialties has become quite competitive and our promotional work consists of advertising in *Sunset*, *The Times Home Section* and local journals, together with personal calls on architects and promotion with building material dealers."

"We plan a new plant location to eliminate cross-town hauling, and we are constantly developing new ways of making decorative products, particularly in the line of automatic machinery."

**MICHIGAN:** "Our sales in 1954 so far are 223 percent over 1953. We expect our sales to increase at least 100 percent in 1955 over 1954. Our block are sold mostly for residence and farm buildings."

"So far we have only been making concrete block. Next year we will be making lightweight block also."

"We have plenty of competition, however we sell our products on a quality and service basis. We advertise in all the surrounding newspapers and over the air once a week."

"We are making inroads on our competition. Where they used lumber and brick before they are now using concrete products."

**NEW YORK STATE:** "Volume of 1954 business increased with prices firm to somewhat lower. Outlook for 1955 is very encouraging for higher volume."

"The answer to competition is increased aggressive selling and more promotional advertising plus increased production efficiency."

"We have no plans for plant expansion, however quality control improvements are planned. Cement shortages have been critical toward maintaining planned volume production."

**IOWA:** "Our volume of block business has been about the same in 1954 as 1953 and we expect it to hold about the same level for 1955. Our production was divided about equally between lightweight and sand and gravel block, with about one third used in residences or foundations and two thirds for larger buildings. These larg-

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**"IN ACTION"**



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**BOOTHS - 82-83-84-85**

**WE'LL BE LOOKING FOR YOU**

**BUILDERS EQUIPMENT CO.**

**3810 North Central Avenue**

**Phoenix, Arizona**

er jobs consisted mostly of school and church work, with a moderate amount of commercial buildings.

"The market definitely is becoming more and more competitive and we expect to introduce some new items for next year to help meet this situation. This competition is from our own industry and not so much from other materials that might be used in place of block. We feel it is a shortsighted policy on the part of many plants to try to increase volume by bypassing a dealer and giving the contractor all or a part of what might be considered a dealer commission, in order to get this business away from a company selling this dealer. This practice will eventually lead to more credit losses and a gradual demoralization of the whole price structure.

**WISCONSIN:** "Contractors are demanding too much service, such as piling block in the basement and putting corner block at each building corner and piling block all around the inside of the basement 2 ft. in from the footing. This has been caused by the block manufacturer in the fight for business, due to overproduction in this area because of too many high production machines. The producers are giving fringe inducements and are actually doing the mason contractor's labor in placing the block around the inside perimeter of the basement without the mason contractor furnishing a helper as had previously been the practice.

"A 10 percent reduction in price actually started in the Fall of 1953 and spread to all plants by 1954. There was no apparent reason for this reduction as we had a labor raise of 5¢ per hour in the spring of 1954 and also the cement raise.

"We are expecting as good a year in 1955 and according to all present forecast it should be improved. Many schools, hospitals, churches and several large industrial projects will be in full swing by then. Large home projects are in the planning and with the ease of mortgage money and low down payments, there is a good general outlook for the economy."

**RHODE ISLAND:** "Our 1954 volume of business is larger than 1953. Prices remained the same. Our outlook for 1955 is very bright for a larger volume.

"Our distribution of block was approximately 30 percent commercial, 20 percent industrial, 30 percent schools and churches, 10 percent residential garages and 10 percent residential and miscellaneous.

"We have marketed a new product called "Split-Crete" which is a colored split block for veneering.

"Our market is very competitive but we are meeting it with direct mail ad-

vertising and with spot newspaper advertising. Our concrete block and our "Split-Crete" colored masonry veneer units have made great strides in our local and surrounding areas. Our principal handicap is lack of lightweight materials in our area."

**ILLINOIS:** "Dollar sales were up 6 percent over 1953. Prices were up about 3 percent. This year 1955 should nearly equal 1954.

"We are constantly adding to the various shapes and sizes of block we make but we do not plan any radical changes.

"SCR brick and pre-fabs are making a strong bid in the residential field. Jet-crete over metal lath, windows and glass block have been taking an increasing percentage of wall area in school construction.

"In the past two years we have overhauled our plant to the extent of installing bulk cement handling, an overhead mixer, traveling weigh batcher, a high production block machine, insulation of kilns and a new steam plant. Next year we plan to erect a covered yard storage area, install mechanical handling of block and improve our control over moisture content and strength of block delivered."

**KENTUCKY:** "Business was slightly heavier in 1954 than 1953 and prices were a little higher. Business looks as good, if not better, for 1955.

"We are investigating the possibilities of manufacturing septic tanks; also the manufacturing of glazed face block. Louisville is becoming increasingly competitive. Manufacturing the best concrete product and convincing the public of its merits is our objective.

"We intend to purchase new manufacturing and handling equipment, possibly in 1955.

"The only handicap at present is that architects expect glazed tile finish at ordinary block prices."

**WISCONSIN:** "We had an increase of 2 or 3 percent in sales in 1954. The trend has been more to industrial work and we guess it to be 50 percent. We have added Stresscrete and a T joist system, ground-face color blocks.

"Some tilt-up construction has entered the field but not enough to affect our market. We hope to build a new plant in the future.

"Our delivery cost is the principal handicap. In this market we are forced to go into excavations and spread block around so that when the mason comes on the job he doesn't have to move them before putting them in the wall."

**INDIANA:** "With regard to present business conditions as compared to last year, we can give you the following comparisons; prices in the two years were identical but, purely due to local conditions, business is off

about 17 percent. The greater amount of business this year was in commercial and school construction with residential taking up most of the loss.

"We find that competition is present to a great extent, more so than in the past; however the competition is primarily a lower grade product than ours and, consequently, priced lower but is not generally acceptable where strict ASTM specifications must be met. We have not had too great a problem with competitive materials but we are looking forward to such competition in the near future. However, with the constant development of shapes and finishes for products we are endeavoring to eliminate such competition. As to expansion, we completed last year a program increasing our 8-hr. production capacity by approximately 50 percent, and any further production requirements could easily be met by either longer shift hours or multiple shifts.

"We have at present no expectation of our market area requiring the full production capacity of the plant."

## Promotion Sells

*(Continued from page 193)*

followed by some architects and engineers. Mr. Copeland points out that all these things actually add up to better concrete masonry construction. An important question now, he says, is to determine whether these rigid requirements are worth their additional cost in a highly competitive field.

The development of a ceramic glaze for concrete block and use of other special faces in a wide range of colors, is expected to have a favorable effect on the 1955 volume of concrete masonry. Split block are coming into greater use and will help to increase the volume.

## Concrete Masonry Economies

S. H. Westby, manager, housing and cement products bureau of the Portland Cement Association, sees a vastly increased market for concrete masonry because of recognition of the advantages of exposed concrete block, especially for interiors.

Mr. Westby cited a new building erected for the Barber-Greene Co. in Aurora, Ill., as an example of the economy of concrete masonry for interiors. He said that by using exposed concrete masonry walls instead of the conventional plastered walls the owners saved \$30,000 on this project.

The school market alone offers tremendous possibilities for concrete masonry, Mr. Westby says. He points out that in recent years exposed concrete block have been almost universally used for interior walls in school buildings.

## Southeastern Concrete Masonry Meeting

(Continued from page 191)

Germany. The ties are relatively expensive but Germany is conserving its forests.

Movies were shown of plant operations and job installations. One of the precast plants in Holland has enormous capacity, with its own erection department, and ships all over the world.

### Belgian International Congress

Gus Smith, Jr., General Ready Mix Concrete Block Co., Clearwater, Fla., reported on the Belgium International Concrete Congress which he attended with Gilbert E. Olson, Phoenix, Ariz. The congress had 250 delegates from 20 countries and the program was presented in the Dutch, German, French and English languages. All forms of concrete products including concrete block, pipe and precast structural concrete were covered. Among topics discussed, shrinkage of concrete was given much attention.

Mr. Smith was impressed with Siporex as made and used in Sweden. Siporex is made of fine sand, portland cement, water, aluminum powder and additives, which mixture is shaped and cut before it is subjected to high pressure steam curing. Mr. Smith's observation was that Siporex appears to have good possibilities for industrial and commercial construction in the United States. He was impressed with the technical efficiency of the French and Germans, and the accomplishments in Sweden toward the improvements of quality in concrete.

Mr. Smith introduced Gilbert Olson, who addressed the Brussels conference and who was elected president for the

next Congress to be held in Germany in 1957. Mr. Olson commented briefly on his observations. He said that there was a tendency at first among Europeans to refrain from divulging their own "secrets." He told the delegates that there is free exchange of information in the United States. He mentioned a locality in Germany where there are 770 concrete block plants within a 10-mile square area. It is on the site of a pumice deposit. In concluding, he said that the congress is setting up a central information bureau to facilitate exchange of information. A complete report of this meeting appeared in *ROCK PRODUCTS*, October, 1954, page 184.

### Association Benefits

The need for industry-wide action to protect and improve the position of concrete masonry and to broaden its use was the theme of a talk by M. E. Rinker, president of the National Concrete Masonry Association. He pointed to certain specific parts of the United States where a great deal of work still must be done to get the story of concrete masonry across. He told of the inroads of clay tile being made in parts of Florida recently as being a challenge to the industry.

Mr. Rinker said that public acceptance of the industry's products depends upon constant developments which can only be gained by the pooling of resources and knowledge which he believes is best obtained and at lowest cost through maintenance of a strong industry organization.

Touching upon competitive developments which must not go unrecognized,



Bengt Lundgren, of Stockholm, Sweden spoke about Siporex

nized, he mentioned the research program being launched by the clay tile industry, with its far greater scale of dues, and the efforts of the lumber and steel industries to capture a larger share of the building market. These are the developments, he repeated, that must be met through strong support of the N.C.M.A.

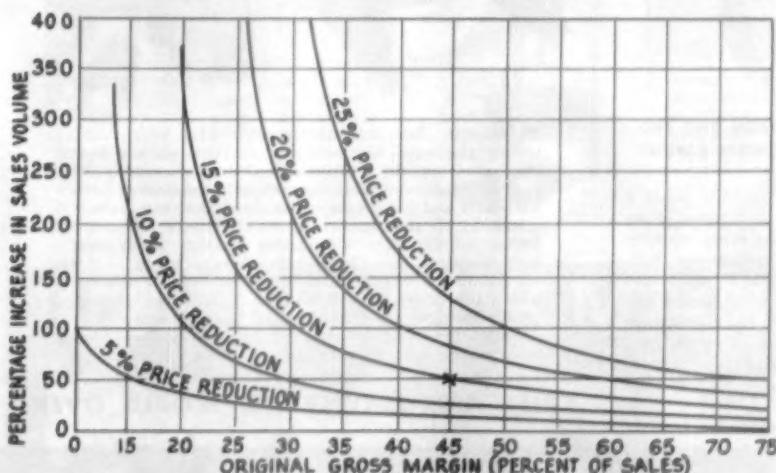
Executive secretary E. W. Dienhart of N.C.M.A. then discussed growth of the association and its expanded activities. The forthcoming Cleveland, Ohio, convention and exposition will have the largest show of machinery and equipment yet, he said.

### Selling

The need for selling values and the avoidance of price-cutting tactics were the main points of emphasis in a very thought-provoking talk, "It's Your Business," by F. E. L. Whitesell, Winter Park, Fla.

Mr. Whitesell started out with a word of warning when he said that this industry has made progress because of a need for its products and that it must be remembered that other industries also have had growing pains. If the industry is only interested in making block, he would consider it a failure. Rather he said, a block manufacturer should consider himself to be working toward building America through supplying materials for buildings necessary for preservation of our free enterprise system. Producers should be interested in providing top values to their customers, practice a strong code of ethics, support their communities, consider their employees as equals, and earn confidence by such activities.

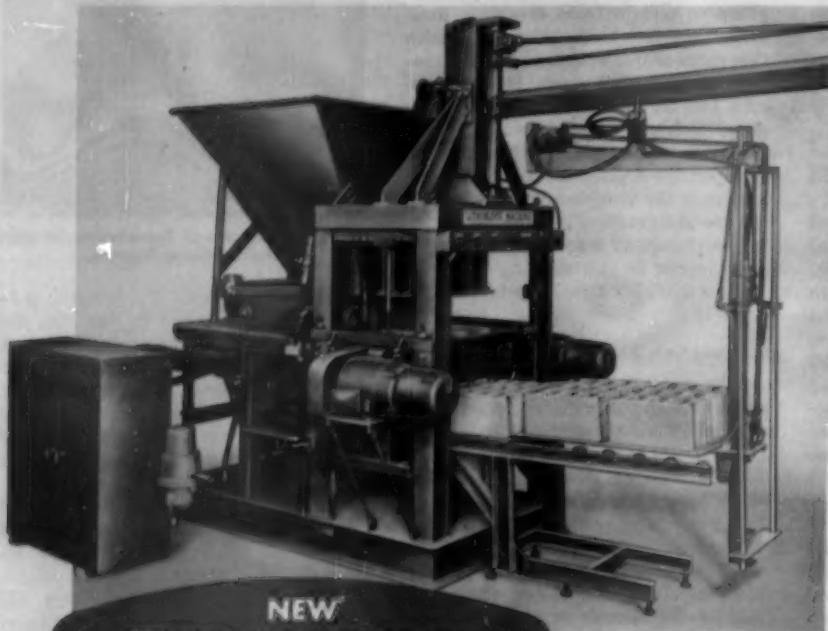
He warned that companies have a tendency to become careless with prosperity and said that there is a need for more selling of values as contrasted to selling on the basis of price which is always secondary. If prices be fairly established, he strongly urged that they be maintained and



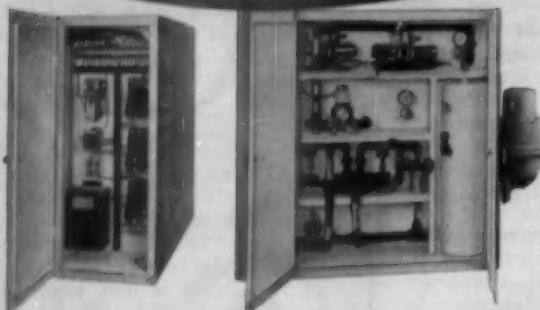
Curves showing percentage increase in sales volume required to recover the loss in dollar gross profits after price reduction. The bottom figures show profit margins from 10 to 75 percent. As an example, assume profit margin is 45 percent and that 15 percent price reduction is being considered. Point where 15 percent price reduction intersects vertical line representing 45 percent margin coincides at the 50 mark for percentage increase in sales volume required.

(Continued on page 223)

# the new Lith-I-Block



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CENTRALIZED CONTROL  
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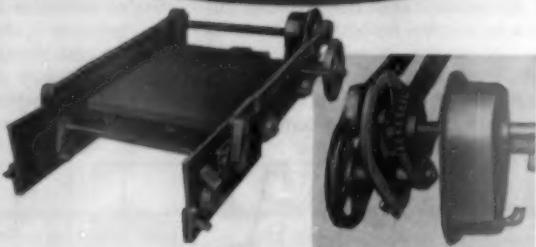
**ALL SENSITIVE CONTROLS REMOVED FROM DIRT AND VIBRATION TO ONE CENTRALIZED CONTROL CABINET**

By placing all electric and pneumatic controls inside a single, fully enclosed, cabinet they are removed from grit, abrasive dust and vibration, besides being centrally located for convenient inspection and adjustment. Substantial savings in cycling time are made possible with this new, compact arrangement. It also eliminates the necessity for 8 valves and switches. A heating element is provided inside the cabinet so that all air valves operate in a warmed enclosure. Cleaning and maintenance of the machine is greatly simplified due to the improved accessibility.

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SMOOTHER  
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AND EASIER  
MAINTENANCE**

Through a program of constant refinement and improvement the makers of Lith-I-Block now offer plant operators the ideal machine to turn out highest quality block in big, low-cost volume.

**NEW  
AGITATOR DRIVE**



An all-new, dual eccentric, agitator drive which completely eliminates the need for shaker rods has been engineered into the redesigned feed drawer assembly. By placing the drive rods on the outside of the drawer, bearing shafts and pivot pins can be finished to much closer tolerances. It also permits the use of Alemite lubrication fittings on the eight self-aligning bearings which carry both thrust and radial loads in the drive assembly, so that friction loss is held to an absolute minimum. A new oil-bath chain drive, fully enclosed in a dirt-proof housing, greatly increases chain and sprocket life. The entire drive assembly can easily be removed intact from the drawer body without special tools.

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SPACE 119-123, 142-146**

LITH-I-BAR COMPANY HEADQUARTERS — AUDITORIUM HOTEL

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## NEW AUTOMATIC FRONT PALLET RETURN



Fast, efficient, one-man operation is now possible through the use of this new Lith-I-Block automatic, front-loading, pallet return. As the green block is placed in the curing rack the magnetic off-bearer is lowered onto the empty pallets; then, as the off-bearer is positioned to pick up another load of green block, the magnet releases the empty pallets which drop to a conveyor chain. From here the pallets are carried through scraping, brushing, oiling and wiping stations and fed back into the block machine. No oil is wasted as the excess drains back into the reservoir where it is strained, ready for reuse. The entire unit is ruggedly built and mounted on casters for easy maintenance.

## NEW LITH-I-SKIP



Thoroughly engineered to meet all requirements of the block plant operator, the Lith-I-Skip hoist operates with easy pushbutton control stopping automatically as it reaches the Up or Down position, with manual control for intermediate stops. A direct gear-head motor drive is used for most efficient power application. Installed with either vertical or inclined track, it is self-supporting and requires no guy wires or outside bracing. The unit is made in 30 and 50 cu. ft. capacities; it may also be had in any other popular size.

## NEW ACCESSORIES FOR MORE EFFICIENT PLANT OPERATION AND MORE PROFITABLE PRODUCTION

### NEW LITH-I-MIXER



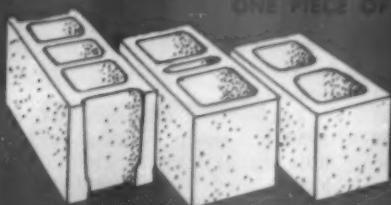
Ni-Hard Liners and Blades plus one-piece welded construction assure long life and economical operation.



Of advanced design, the new Lith-I-Mixer uses interchangeable, identical, Ni-Hard liners only 11 $\frac{1}{2}$ " square on both drum shell and door. Absolutely maximum life is thus secured from a set of liners and replacement stock requirements are minimized. Sectionalized high-carbon steel plates which protect the drum head are also renewable. A double-hinged drum guard with protected handle is provided for safe, convenient charging. Motor and countershaft sheaves with multiple V-belt drive are completely enclosed in a heavy, two-piece, steel guard to meet all safety regulations as are the drive and pinion gears, which are available with either grease or oil bath lubrication. A full length water manifold insures even distribution of water. Clutch and discharge levers are conveniently located on the charging side. The mixer is made in both 30 and 50 cu. ft. capacities.

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Position \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

City & State \_\_\_\_\_



Central mix plant of Spartanburg Concrete Co., Inc., Spartanburg, S. C. Note deflecting shield in front of mixer

- About 70 percent of companies expect increased volume in 1955. Prices have stabilized due to keen competition

By BROR NORDBERG

## Many New Plants Entering the Ready-Mixed Concrete Industry

ACCORDING TO A GREAT NUMBER OF LETTER RETURNS to our questionnaire, the ready-mixed concrete industry had very excellent volume of business in 1954 and is looking forward with optimism to 1955. There will continue to be considerable building of new plants with more new producers entering the field and much activity in the enlargement of plants and delivery equipment.

Seventy-two percent of producers enjoyed increased volume of business in 1954 as compared to 1953, with an average increase in the range of 10 to 20 percent. The peak reported was 65 percent. Fourteen percent had 1954 volume equal to that of 1953 and 14 percent reported reduced volume. Decreases were modest except for one or two unusual cases.

Prices held at 1953 levels for 63 percent of the producers. Twenty-three percent increased their prices and 14 percent had lower prices. Where competition was such that price concessions had to be made, profits necessarily declined. In general, the costs of doing business increased.

According to our figures, 70 percent expect 1955 volume to exceed 1954 figures, 26 percent expect to hold at 1954 levels and only 4 percent anticipate reduced volume. There is little likelihood of significant price changes. Among the more unfavorable forecasts were those from agricultural areas where reduced farm income and the 1954 drought will have adverse effects. Shifts in distribution by markets are local and not significant except that there were several reports of increases for the building of highway bridges.

Interest in lightweight aggregate concrete is on the increase, with 48 percent reporting that they do produce such concrete. In the majority of

cases, the volume is modest and it is a special handling proposition not yet justifying special storage and handling facilities. However, some companies have had sufficient demand that they are considering the installation of bulk handling facilities including special bins for the purpose. A few producers are putting out both load-bearing and non load-bearing lightweight concrete and handle two or more aggregates for the purpose. Others await the availability of suitable lightweight aggregates in their area and intend to produce such concrete.

Such concrete requires special attention and presents problems not inherent in regular mixes. Some have experienced a tendency for the water to leave the material too rapidly, and inconsistencies in yield and segregation present problems. Others find it necessary to be certain not to overmix and to check unit weights at frequent intervals in order to have uniformity. Addition of a small percentage of sand and an air-entraining agent is the practice of some producers with certain of the "heavier" lightweight aggregates, in order to improve workability.

The majority made either major or minor investments in batching plants or delivery equipment in 1954 and there will apparently be lots more of it in 1955. In general, delivery capacity will be stepped up by the addition of new mixer trucks and many older units are scheduled for replacement by larger units. There will be many new batching plants by established producers who seek shorter hauls, and it is apparent that many new producers will start production in 1955. Some are to start the production of concrete block, concrete pipe, septic tanks and prestressed concrete.

Twenty-nine percent are using two-way radio and all report favorable results. A year from now the percentage will be higher judging from interest expressed. A few use radio only in repair units and in official cars thus far. One or two are using mobile telephone instead. Those with short hauls exclusively do not feel the cost justified.

In answer to our question as to the influx of new competition, it was surprising how many new plants have started into production. In one metropolitan area, seven new plants were reported. Many are small operations and it seems that some of them are putting out a sub-grade product. One effect is keener competition for business and the necessity to make price concessions.

Among comments were the following:

**ARIZONA:** "The volume of business and prices was slightly lower in 1954, however, an increase of about 15 percent is expected in 1955. We experienced an increase of 30 percent in home building, with other types remaining about the same."

"We have completely rebuilt our plant in the past year and feel that it rates as the most modern in the state and ranks well with many other states. We have used two-way radio for about six months and would not be without it. New competitive operations have entered and are very rough. Handicaps are high labor costs, high equipment costs and increasingly tough competition."

**TEXAS:** "The volume of business in 1954 was much increased with very little change in prices. The future outlook is good, better than 1954. There has been a 40-50 percent increase in construction of highways in this area

The Barber-Greene line is made up of standardized, pre-engineered components including a wide range of Frames, Trusses, Drives, Take-ups, Feeders, Hoppers, Belt Cleaners, Backstops, Brakes, Housings, Walkways, Spouts, Hoods, Gates, Supports, etc.

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**CONVEY** with pre-engineered components, eliminating special engineering time and expense.

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# Barber-Greene

AURORA, ILLINOIS, U.S.A.

WRITE for  
INFORMATION

descriptive literature . . . sound movies  
cost studies . . . nearby job inspection . . . plant layouts



and a 60-70 percent increase in home building, etc.

"We produce very little lightweight aggregate concrete. We often find in pouring this concrete that the water has a tendency to leave the material too fast even after adding an air-entering agent.

"We have recently expanded our delivery equipment and are expanding our plant facilities at the present time. We do have new competitive operations entered in our local area.

"One of our problems results in the uneasiness that often occurs as to who is responsible on graded jobs for the strength of the concrete when certain specifications for strength are required. On most graded jobs the architect has an engineer on the job and when difficulty arises he is there to solve the problem. Our difficulty comes when the architect fails to provide an engineer and a cylinder does not stand up as it should, we are left in a responsible position. We are not engineers and being a small company cannot afford to hire an engineer and do not feel that we should be responsible where no engineer is on the job. If others have had this problem, in what way did they go about solving it?"

Oklahoma: "Volume of business in 1954 was about half of that in 1953 due to the complete stop in oil activities in this area. Material prices increased during the year but due to the abundance of labor (common) it was impossible to increase price of concrete in direct proportion. The year 1955 promises to be a better year with re-activation of the Clinton-Sherman Airbase only 16 miles from here. Practically all building this past year has been commercial, mostly churches expanding or new buildings.

"In the past three months we have gone into lightweight block. We have a 180 Fleming 1-block machine. We make block when we are not hauling ready-mixed concrete. It promises to be a business in itself from all indications of sales so far. We have not produced any lightweight concrete."

Montana: "Prices were up fractionally and volume of business was up about 10 percent in 1954. In this area, material has gone largely to commercial and public building the past two years. The school building program is expected to fall off sharply next year.

"We expanded slightly in both plant facilities and delivery equipment this year. No further expansion is contemplated next year. Competition has entered the picture this year. Our principle trouble has been securing adequate financing to purchase needed equipment, which in turn would make ours a more efficient operation."

Illinois: "We are producers of

sand, gravel and crushed stone and distributors of ready-mixed concrete and many warehouse products. Considering our business as a whole, the physical volume in 1954 was slightly better than in 1953. Prices on ready-mixed concrete were much more firm and as a result our dollar sales will probably be 5 percent to 7 percent better than 1953.

"We do not produce lightweight aggregate and we seldom purchase it for resale. At this moment we are not contemplating any additional activity in this field. During the past few years we have been called upon at times to furnish some ready-mixed concrete using lightweight aggregate and we have found it to be somewhat of a burden on us because of the additional bins, etc. required. We also had difficulty at times because the yield was not consistent.

"During the past year we set up a ready-mixed concrete plant at one village and an auxiliary plant just south of another city. We are contemplating the addition of a third plant. With these added plants we have shorter hauls and additional delivery equipment is not quite so essential.

"We use two-way radio on our trucks in the city and our experience with it has been very good. With the congested traffic conditions which we encounter we are able to keep better track of our trucks. Another important advantage is that our dispatchers can get immediate information as to delays at job sites and other trucks on the way to jobs can be diverted.

"Several additional ready-mixed concrete plants have been set up in our local area during the year. Some of the handicaps to doing business, which we experienced in the past few years, were not so evident this year. Car shortages did not plague us and we escaped a severe cement shortage primarily because the bad stretch of weather in October enabled the cement manufacturers to catch up."

Minnesota: "Our volume of business will end up approximately 10 percent over 1953 volume. It was necessary to increase our price on ready-mixed concrete in 1954 due to increased labor cost and increase in portland cement. We believe our volume of business for 1955 will equal that of 1954. There was a decided increase in public buildings in 1954 and in highway work in this vicinity.

"We have produced lightweight aggregate concrete. Special problems in connection with its handling is that our volume does not warrant bulk handling and due to lightweight of aggregate requires considerable storage space.

"We have increased or speeded up our aggregate handling and have add-

ed one additional 5-cu. yd. tandem mixer to our fleet this year.

"Several small plants have opened up in a radius of 20 miles. Shortage of cement during the peak construction period was our principal handicap."

Illinois: "Our 1954 volume was approximately 10 percent over 1953. Prices were slightly lower and costs were slightly higher. At the present time the 1955 outlook seems good.

"My personal opinion of the principal handicap to the building industry is the fact that we depend greatly on improvements which are financed by governmental agencies, such as sewers, school, highways, etc. I think that the campaign which has been waged on government spending has backfired. Large numbers are voting against any improvements. None of us like to pay taxes. It is going to be increasingly difficult to promote any new work of this type. I think the situation is not good."

Ohio: "Our volume for 1954 will be about 10 percent greater than 1953. Prices were about the same as 1953. There is a noticeable increase in the number of new, and additions to, schools, churches and recreational facilities, also expanding streets, highways and sewer construction which probably will carry through 1955 and 1956, and perhaps well beyond.

"We do produce lightweight concrete, as well as medium-weight concrete (85 to 100 lb. per c.f.). With the lightweight (vermiculite) concrete, care must be taken not to over mix. After the ingredients are thoroughly incorporated any further mixing will tend to reduce the volume, thereby decreasing the insulating value. At the present time we are handling the vermiculite in 4-cu. ft. bags, but if demand continues to increase we will probably try to effect delivery of the vermiculite in bulk covered hopper cars. The medium weight aggregates, such as Limestone, Haydite, etc., are handled in bulk from hopper bottom cars and constitute no special problem except of course the storage bin capacity.

"In the past two or three years we have expanded our production facilities to a point well beyond present requirements. We contemplate increasing our delivery capacity about 10 percent or a little more for 1955. We do not use two-way radio. We operate nine plants in and around the metropolitan area and our length of haul, we feel, is too short to justify the expenditure.

"New small transit-mixed batch plants are appearing here and there. The unfortunate thing about this situation is that they seldom know or perhaps care about 'quality control,' and

(Continued on page 207)

# Increase Your Masonry-Unit Profits

## 8 Ways

National  
Brick & Supply Co.  
Terra Cotta, D.C.



with a  
**Custom-Designed  
Autoclave by RECO**

### RECO Autoclaves Assure:

1. INCREASED Production Speed	5. DECREASED Production Costs
2. INCREASED Delivery Speed	6. DECREASED Handling Costs
3. INCREASED Volume	7. DECREASED Inventory Needs
4. INCREASED Product Quality	8. DECREASED Storage Requirements

As a building products manufacturer you can recognize that the 8 advantages of steam pressure curing listed above are basic to a good profit picture. And with RECO autoclaves you can assure yourself that these 8 proven advantages will work for you all year long. RECO has pioneered in the development of steam pressure autoclaves and is now accepted as one of the most complete and authoritative autoclave production centers in the nation. We invite you to call, write or wire RECO at any time for free consultation, recommendations and estimates on custom-built autoclaves or other fabricated units to meet your plant's special requirements.



### **Richmond Engineering Co.**

METAL FABRICATORS SINCE 1914

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\* This is the 114th of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.



Ivan Bernson, Pres., Emil Jantz, V. P., and James Patvin, Secy. & Treas. of Western Concrete Products Co.

## One good VIBRAPAC Deserves Another!

Western Concrete Products Co., Cadillac, Michigan, is a typical VIBRAPAC plant. Centrally located in Northern Michigan, this progressive firm furnishes block for most of the big building projects: colleges, hospitals, army installations, public schools, churches, etc.

When the demand for block calls for new block machines, Western Concrete Products Co. always specifies Besser Vibrapacs. Their latest, a front pallet feed model, was installed in 1953. Ivan Bernson, President, states: "We prefer a VIBRAPAC because it is the best machine on the market".

**BESSER COMPANY, Box 135, Alpena, Mich.; U. S. A.**  
Complete Equipment for Concrete Block Plants



Front Pallet Feed VIBRAPAC installed in the Western Concrete Products Co. plant, Cadillac, Mich. The machine is fully automatic. Off-bearer merely guides the power hoist. Illustration shows off-bearer removing 4" slabs.



Power lift truck removing cured block from kilns to covered storage yard. In addition to conventional block, Western also produces Soffit Block for floors and roofs.



Exterior view of Western Concrete Products Co. block plant. Note modern, all-concrete masonry constructed office building. The company recently added more kilns, covered storage facilities and a new cubing building.



A Half-Century of Concrete Masonry Progress

## Ready-Mix Concrete Review

(Continued from page 204)

have a price complex whereby they seem to feel that the only way they can get business is at a lower price. Time eventually eliminates such operators, but in the process untold damage has been done to the ready-mixed concrete business, and the responsible operator has been damaged financially.

"We find no one particular handicap in doing business, but the one thing that concerns us most is that labor costs are being forced up and up by zealous union officials until we may soon find ready-mixed concrete priced out of the picture. We feel that the far-sighted union officials should recognize this danger, and wake up to the fact that the same fellow that uses ready-mixed concrete is indirectly paying their salaries also. A more intelligent approach, it seems to us, would be a full-hearted cooperation with the producers looking toward better customer relations, more efficient operations, and expanding industry, and consequently more and fuller employment.

"We have an axle-mile gasoline tax in Ohio levied on all trucks with three or more axles. The record-keeping is quite a chore and rather expensive. Also the load limits imposed by our state (31,500 lb. on tandem axles) preclude any economy that might be further effected by hauling larger pay loads."

MISSOURI: "Prices remained the same but volume of business was off approximately 2000 cu. yd. as compared to 1953. Outlook for 1955, as of now, equals 1954.

"We have produced zonolite aggregate concrete for various contractors. The biggest problem is low yield, even when conforming to exact mixing time, water content, etc. Also, storage and handling to bins makes for extra cost.

"We replaced two old trucks with new ones. We expect to enter the pipe and septic tank field later.

"We do not have two-way radio but have considered its advantages. It would cut costs by eliminating many split loads, through keeping in direct contact with jobs.

"Rising costs of cement and materials when competitive business holds prices down is our chief handicap. Money out on receivables is much too slow in coming in. Contractors with too many GI and FHA long term loans are waiting for their money while we in turn are carrying them."

MASSACHUSETTS: "Our crushed stone business in 1954 was off about 10 percent from 1953, but prices remained about the same. Ready-mixed concrete was about the same for both years,

and prices are off slightly. This is unfortunate because costs have risen quite sharply in the last year. Putting it another way, the margin of profit has been about cut in half.

"The breakdown of our business, both stone and concrete, shows no abnormal changes over previous years. The only noticeable point is that the concrete business is gaining on foundation work but lowering on heavy construction and road work.

"We do not produce lightweight concrete and have no intention of doing so unless it is forced upon us.

"We were the first people in the country to put two-way shortwave radio equipment in our mixer trucks. It is a very valuable service, and we would hate to lose it."

CALIFORNIA: "Our volume is better this year. Our prices are not as good due to a competitive situation.

"We have increased our fleet from 16 to 17 mixer trucks (all 6-cu. yd.) and are in the process of rebuilding a garage, warehouse and truck-washout facilities.

"Meeting the service demands of our customers is our greatest problem. Having enough trucks to take care of peak demands and keeping the fleet profitably busy between peaks is the problem.

"We find a contractor-owned concrete company a disturbing factor in the market. This is partly due to his own activities and partly to the consideration our other competitors give to his activities."

OHIO: "Our volume in dollar sales by direct comparison increased 7.5 percent in 1954 over 1953 plant for plant, but our expanded facilities in 1954 will show us a dollar increase of approximately 20 percent in all areas.

"To our knowledge, there have been no marked changes in distribution of markets regarding the type of building either private or public, commercial or industrial. In home building the tendency seems to be heavily leaning toward larger multiple building jobs, but there are still a large number of small units being completed by small builders. We believe the dollar percentage in construction for 1955 will show a marked increase in three fields — public buildings, such as schools, highway construction and home building.

"We do produce lightweight aggregate concrete. The call for this item is increasing slowly, main uses being for slab insulation on the ground and for overdecking on roof. The volume is not sufficient as of yet to warrant our setting up special plant facilities.

However, the problems in handling lightweight concrete demand personal engineering techniques. The mixing time is very short and must be watched carefully and the design must have special attention on each job.

"We have expanded our plant facilities and delivery equipment over 30 percent in the past two years.

"We as yet are not using two-way radio, but have been studying it for approximately six months and intend to make further surveys with users here in our state.

"New competitive operations are threatening to enter our local area this coming year — at least one. This we believe will be a small operation.

"We see no principal handicaps in doing business. It might be easy to find excuses for mistakes and label them handicaps, but we feel in our organization that the handicaps belong to our competitors and we recognize none.

"Our personal feeling for 1955 based on the Dodge reports and other sources normally reliable, is that the construction industry and allied lines will enjoy a very prosperous and possibly expanded business to the extent of perhaps 10 percent."

MASSACHUSETTS: "The volume of business in 1954 will be between five to ten percent below the 1953 volume. The outlook for 1955 is promising and I would expect that it will approximate this year's totals.

"Our distribution has included both public and private work in reasonably equal proportions and although we have not furnished material for home building, there has been considerable activity of this nature particularly in the suburban areas.

"We have furnished small amounts of lightweight aggregate concrete and we set aside a special bin for handling this material. Our operations have been profitable since we made provisions in our price to cover the extra costs involved.

"We have not expanded either plant facilities or delivery equipment and any new purchase of trucks and mixers would be purely on a replacement basis.

"We have been struggling for the past three years with a serious competitive condition which to some degree has been the result of over-expanding in both plant and equipment and even with rising costs our markup has gradually shrunk.

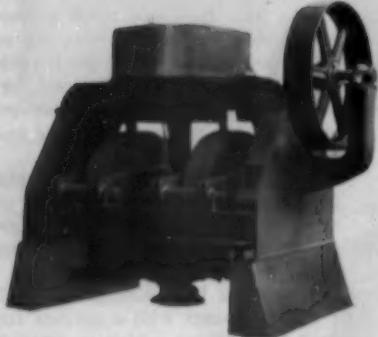
"Our principal handicap this year was of course the nine weeks' strike of the cement companies when we were forced to buy out-of-area cement at a substantial premium in order to stay in the business."

*(To be continued in the next issue of  
ROCK PRODUCTS)*

# "AMERICAN" grinds aggregate at half the cost



Sixty yards of sized lightweight aggregate is produced every hour by these two "American" No. 9 Grinders at the Memphis, Tennessee plant of John A. Denie Sons Company.



## The Problem — COST

Production of sized lightweight aggregate at the Denie plant was too costly . . . the hammer mill made heavy power demands, and shutdowns for maintenance and repair were frequent.

## The Solution — "AMERICAN"

The equipment was replaced with the two "American" No. 9 Rim Discharge Grinders pictured, totalling 60 yards hourly capacity.

## The Result — SAVINGS

50% reduction in power consumption • 50% less maintenance time and cost • virtual elimination of shutdown time.

- Newest "American" Rim Discharge Grinder No. 9A . . . 30 yards rated hourly capacity. Yoke-mounted millers save power, reduce starting load . . . long-wearing cut-steel gears run in oil . . . entire design insures trouble-free, economical operation. Other "American" grinders from 4 to 75 yards per hour . . . there's an "American" Grinder exactly suited to your type of aggregate and your capacity requirement.

**American**  
SINCE 1857  
FROM CLAY BANK TO KILN

THE W. A. RIDDELL CORPORATION  
BUCYRUS, OHIO

# N.C.M.A. Program and Exhibits

• National Concrete Masonry Association annual convention will be held in Cleveland, Ohio, January 24-27. Exposition of equipment will be big attraction for visitors

CLEVELAND, OHIO and its Auditorium will be the scene of the National Concrete Masonry Association 1955 convention from January 24 to 27, inclusive. Convention sessions will be held in the Music Hall. The exposition of equipment exhibits will open in the afternoon on January 24.

M. E. Rinker, president of N.C.M.A. will preside at the opening session on January 24 in the morning. Carroll Strohm, Jr., secretary-treasurer, will present the treasurer's report; Horace Bush, chairman, nominating committee, will conduct the election of directors; and E. W. Dienhart, executive secretary, will give an appraisal of the association's activities and plans for the coming year in his address, "Where Do We Go From Here?" Following Mr. Dienhart, President Rinker will give his message. A. R. Waters, chairman of the Budget and Finance Committee, will present his report, followed by Philip Paolella, chairman of the Local, State & Regional Association Committee, who will present the report of this committee.

"Unit Masonry Association Points the Way to a Bigger Masonry Construction Market" is the title of an interesting talk to be given by Tip Brown, executive secretary, Mo-Kan Concrete Products Association.

W. R. Ireland, chairman, Membership Committee, will report for this committee with a talk on "Your Money's Worth." Theodore Leba, Jr., manager, Washington office, N.C.M.A., will follow with his report on "Recent Developments in Washington As They Affect the Concrete Products Manufacturer."

"Architectural Possibilities of Concrete Masonry in Home Construction" is the title of an interesting talk by Elizabeth Gordon, editor, House Beautiful Magazine.

In the evening there will be a "Get-Together Party" in the Rainbow Room of the Hotel Carter.

## Tuesday, January 25

Otto Buehner, chairman, Promotion Committee, will preside at the morning session which will open with a movie, "It's Everybody's Business," produced by U. S. Chamber of Commerce.

Chairman Otto Buehner will open the session with a talk on the subject, "A Guinea Pig's Idea of N.C.M.A.'s

Promotion Program." He will be followed by W. P. Markert, director of promotion, who will tell "How to Capture a Large Share of the Building Dollar." Ben John Small of the A.I.A., and member of LaPierre, Litchfield & Partners, architects, will address the meeting on "How the Architect Views Product Advertising and Promotion of Construction Materials." Clair W. Ditchy, president, American Institute of Architects, will tell about the "Use of Concrete Masonry in the Detroit Area." G. Donald Kennedy, president, Portland Cement Association, will describe the "Portland Cement Association's Advertising and Research Program on Concrete Masonry."

In the afternoon, there will be a "Symposium on High Pressure Steam Curing," starting at 3 p.m. The exposition will be opened in the afternoon.

The annual banquet with floor show and dancing will be held Tuesday evening at the Hotel Carter.

## Wednesday, January 26

Benjamin Wilk, chairman of the Technical Problems Committee, will preside at the morning session. The first speaker will be John Taheny, president, Mason Contractors Association of America. "Hurricane Resistant Construction" is the subject of an address to be given by E. R. Mangotich, assistant engineer, N.C.M.A.

"Studies of Block Curing and Drying Methods" will be described by C. C. Carlson, manager, Products Development Section, Research and Development Laboratory, P.C.A.

"Concrete Masonry in Military Construction Program" is the subject of an address to be given by Harry Zackrison, chief, Engineering Division, Military Construction, Office of the Chief of Engineers, Washington, D.C.

"Is Engineering and Technical Research Important?" is the subject of a talk to be given by R. E. Copeland, director of engineering, N.C.M.A.

The morning session also will have a panel discussion on "Paint and Waterproothing," with E. A. Peterson as moderator and Harold Lutes, Hugo Quillian, E. E. Osborn, and Wm. S. Sells as members of the panel.

## Thursday, January 27

S. Carl Smithwick, president-elect, N.C.M.A. will preside at the morning

session. Earl W. Peterson, chairman, Accident Prevention Committee, will present the N.C.M.A. Safety Contest Awards. "Block Plant Laboratories" will be the subject of a talk by Henry Toennies, assistant engineer, N.C.M.A.

"Report of International Congress of Precast Concrete" held in Brussels, Belgium in 1954 will be given by Gilbert E. Olson, president, International Pre-Cast Concrete Manufacturers.

Thos. Murphy, Bricklayers International Union of America, is scheduled for a talk in the morning. H. W. Bush, chairman, "Trade Relations Committee," will present his report.

## EXHIBITS

Adamson United Co.

Booths 185-186

Adrian Peerless, Inc. Booth 151

Almar Specialty Machine, Inc.

Booth 201

American Webco Corp. Booth I3

Berg Vault Co. Booth 175

Bronzoleum burial vaults and Berg lowering devices.

Bergen Machine & Tool Co.

Booths 130-131-132-133-134-135

Bergen Tri-Matic automatic block machine, incorporating the front pallet return, ZerOmatic height and density control.

Besser Manufacturing Co.

Booths 124-125-126-127-138-139

140-141

Translite (lighted mural) of the complete line of Besser equipment; also a small scale model autoclave showing curing, loading and mechanical handling of concrete block.

Builders Equipment Co.

Booths 82-83-84-85

Showing Superlite unloader in action.

Burkhart Engineering Associates, Inc. Booth 12

Consolidated Duo boiler, with literature and test reports.

Blaw-Knox Co.

Booths 38-39-40-41-42-43

L. Burmeister Co. Booth 174

The Burns & Russell Co. Booth 176

Custom SPECTRA-GLAZE units laid up in wall to show various colors of a new "Speckled" prod-

(Continued on page 216)

# PREVENTIVE Maintenance

## In the Ready-Mixed Concrete Industry

By JAS. A. NICHOLSON\*

SOME PREVENTIVE MAINTENANCE services can be scheduled on a mileage basis, others on an hours-of-operation arrangement, while some are best handled on a regular calendar basis. For example, wheel bearing service should be scheduled on a mileage basis, and mixer-engine overhaul planned on an hours-of-operation basis. Crankcase oil changes, oil filter service and chassis lubrication are generally handled most efficiently on a calendar basis; say, weekly, bi-monthly or monthly. Air cleaner service should be scheduled on a weekly arrangement or even daily under very dusty conditions. Because of the excessive amount of engine idling in concrete deliveries, services normally handled in other businesses on a mileage basis are handled best by ready-mixed concrete producers on an hours-of-operation arrangement.

At the end of each day, all pieces of equipment should be checked to determine that they are ready for a full day's use. Each weekend, through effective preventive maintenance procedures, equipment should be put into proper condition to give 100 percent service during the coming week's operation. All equipment must be lubricated and otherwise serviced at regularly planned intervals. During the winter (or other generally slack period) basic repairs and rebuilding must be accomplished so that all the equipment is in the best possible shape.

Regularly each month, have plant maintenance men and mechanics list contemplated jobs that should be considered for the next month. Each week, have these men and drivers report jobs that will need attention during the coming week; each day, have all operating employees report work that must be done immediately.

Sell the importance of proper maintenance procedures to your key operating personnel. Have maintenance employees keep abreast of maintenance suggestions, new supplies and equipment developments through contacts with equipment manufacturer's representatives, visits to other ready-mixed concrete plants and studying trade magazines. Hold meetings regularly to consider maintenance problems. Es-

27: A producer views the ready-mixed concrete business. Second article of series on preventive maintenance

tablish procedures that will enable you to plan ahead for repair work and overhauls. Make certain that maintenance men and mechanics have necessary tools, parts and supplies available when they are required. Make every effort to avoid doing maintenance work on overtime. If you are operating several plants, shut down one plant on a slow day to do required maintenance on straight time without interruption.

If a certain maintenance problem is regularly recurring, something should be done about it. You just don't continually repair the same defect; you realistically attempt to get at the cause of the repeating trouble. Spot recurrent failures and aggressively seek a solution that will end the trouble.

In our industry, the time to start an integrated maintenance program is during a slack season when equipment downtime will not interfere with service commitments. Use slack weeks, inclement days and other slow periods for overhauls and repairs. Attempt to schedule new plant equipment deliveries so that plant installations, changes and improvements can be completed in the winter or other slack period.

### Keep Equipment Records

Manufacturer's instructions for operating, lubricating, adjusting and repairing procedures should be checked for each machine and vehicle. These instructions should be filed in a proper keeping place and only released by card to a responsible employee for temporary use. The employee should return the instructions to the file and his name checked off the card.

Too often, instruction books and parts catalogues are delivered to the purchasing agent or front office and never find their way to the operating people who are supposed to use them.

As has been the case with other producers at times of equipment breakdown, we have been embarrassed and repairs delayed because a parts catalogue for the unit in trouble cannot be found. Now is a good time for any producer reading these words, to check on parts catalogues and instruction manuals as well as to set up an efficient filing system.

Records should be kept for each in-

dividual piece of equipment. There is no other way of measuring costs involved in downtime and breakdown. The effective use of good records shows the need for equipment replacement and changes in maintenance procedures. Records should show up the high cost areas and suggest the need for corrective action. Such use of equipment records clearly pinpoints idle time in the cost figures and may be helpful in determining what kind of equipment to buy. When records begin to show costs of faulty maintenance work, management is generally prodded into action to set up an effective maintenance program.

A record system has two primary functions: (a) to schedule and follow up preventive maintenance operations; and (b), to determine overall operating costs and economical equipment life.

### Essential Records

A preventive maintenance schedule should be prepared for each piece of equipment. The schedule should indicate how often each maintenance function is to be performed, when it was last done and when it is due again. Included in the list of services should be such items as:

1. Crank case oil change (truck engine and mixer engine).
2. Oil filter service (truck engine and mixer engine).
3. Air cleaner service (truck engine and mixer engine).
4. Transmission oil change (truck engine and mixer engine).
5. Differential oil change on truck.
6. Wheel bearing service.
7. Universal joint inspection and service.
8. Battery inspection and service.
9. Chassis and engine accessory lubrication.
10. Clutch lubrication and service (truck and mixer).
11. Drum bearings and discharge mechanism in service.
12. Inspection and service of tank, water pump and valve.
13. Engine tune-ups and overhaul.
14. Inspection of brakes, tires, lights, signal devices, etc.

(Continued on page 212)

\*Pres., Nicholson Concrete Co., Toledo, Ohio.

# NEW COMPLETELY PORTABLE BATCHING PLANT



## NOBLE-MOBILE BATCHING PLANT

FOR CONCRETE CONSTRUCTION IS A COMPLETE PLANT IN EVERY DETAIL. IT FEATURES THE STANDARD NOBLE SEMI-AUTOMATIC OR FULL-AUTOMATIC CEMENT AND AGGREGATE BATCHING SYSTEM. BULK CEMENT IS BATCHED IN THE CENTER CEMENT COMPARTMENT OF A STANDARD TWO YARD WEIGH HOPPER. OUTPUT CAPACITY IS 60 YARDS PER HOUR OR MORE.

Aggregate bin is 3 compartment, 28 tons capacity. Charged by scooploader, clamshell or conveyor.

Bulk cement storage capacity 1000 cu. ft. standard bulk truck receiving facilities.

Request one of our engineers to bring you complete information on the new NOBLE-MOBILE.

► NOBLE-MOBILE BATCHING PLANT ready for transporting between jobs. The compressor, motor control panel board, and batching controls are an integral part of the unit which is moved intact. The trailer dolly is a part of the unit and is within legal limits, without special permit, for travel on highways in most states. The cement elevator and receiving hopper, weigh hopper and conveyor section are hauled on a flatbed truck or trailer. Assembly and take-down at job-site is a simple operation.

THE PLANT IN OPERATION, BATCHING CONCRETE RIGHT ON THE JOB, FOR A LARGE HOUSING PROJECT. ▶



**DESIGNERS AND BUILDERS**

CEMENT AND AGGREGATE BATCHING PLANTS  
BULK CEMENT PLANTS • AGGREGATE BINS  
CEMENT SILOS • CONVEYORS AND ELEVATORS

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SEATTLE OFFICE: 518 FIRST AVENUE N., ROOM 22, SEATTLE, WASHINGTON • LOS ANGELES: 117½ WEST MANCHESTER, INGLEWOOD, CALIFORNIA

# MEET A MONEY SAVER



Latest Model "D"

A NATIONAL CAR SHAKER, in service 4½ years at a ready-mix plant, has unloaded over 1 million tons of sand and gravel in all kinds of weather. Only one man has operated the shaker. Estimated savings — \$23,000.

**NATIONAL CONVEYOR & SUPPLY CO.**  
356 N. Harding Avenue  
CHICAGO 24, ILL.

**FOR THE FINEST CONCRETE PIPE...  
YOU NEED FINEST FORMS!**

*The Quinn Standard*

Backed by over 40 years of reliable service, the QUINN STANDARD is recognized as the finest concrete pipe form in the world over. Thousands of pipe manufacturers, from the smallest to the largest, look to Quinn for equipment to produce the finest concrete pipe at the lowest possible costs.

• QUINN HEAVY DUTY PIPE FORMS

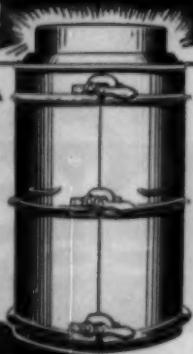
For making pipe by hand methods by either the wet or semi-dry process. Sizes for pipe from 18" to 120" and larger. Tongue and groove or bell and pipe in any length desired.

WRITE TODAY for complete information and catalogues.

Also manufacturers of  
**QUINN CONCRETE PIPE MACHINES**

*Quinn*

WIRE & IRON WORKS  
BOONE, IOWA



KEEP  
ABREAST  
WITH  
INDUSTRY  
TRENDS  
THROUGH  
ROCK  
PRODUCTS

## Preventive Maintenance

(Continued from page 210)

Every record system should start with the drivers' report, covering hours and miles of operation, number of cubic yards processed, and such other simple information required for the record. Any needed service or repairs should be immediately noted by the driver on this report. The yard office should add the amount of fuel and lubricating oil serviced to the unit and pass the daily report to the clerk who maintains the equipment records. He should post this information and follow the equipment to determine when it is due for any particular preventive maintenance service. The daily reports should be examined by the person in charge of equipment for proper action on the drivers' complaints or out of order listings.

Keep track of repairs by maintaining records on individual units and make record entries at the time repairs are made. Isolate downtime costs as to mixer and truck. If you are short on manpower, check first the older equipment. Know the offender. Use regular reports to establish control over maintenance work. Set up yardsticks to measure your progress. Use charts to show the effectiveness of your inspection, lubrication and the balance of your preventive maintenance program. Build a downtime control over your plant and delivery equipment.

On the use of old equipment, I have somewhere read the following statements: "The total monthly maintenance cost of a piece of equipment should be checked against the monthly amortization figure to determine its "use" value. If the maintenance figure climbs too high in relation to the mixer truck value, it may be time to replace that unit." Regardless of the source of this information, those statements add up to sound advice.

Whenever any equipment is discarded, salvaged parts and tires should be promptly reconditioned for use. Operators should maintain a running record of all usable parts. All usable pieces of equipment should be tagged and listed. The record should contain the year and model of the discarded unit and a list of presently operated equipment on which the individual part can be used. There is no excuse in keeping old parts if you can't find them or they are not usable when needed.

Two of the better cost men in our industry are Bob Shiely of Guaranteed Concrete Co. of St. Paul, Minn., and Ed Pitzer of The Hilltop Co. of Cincinnati, Ohio. Bob is a son of one of the industry's most prominent pioneer families. Bob's paper on "How

*Everybody*



*But Everybody Is Coming*



**35th Annual  
NATIONAL CONCRETE  
MASONRY ASSOCIATION  
CONVENTION  
and the  
9<sup>th</sup> CONCRETE  
INDUSTRIES  
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Carrier mounted Bantam moves from job-to-job at speeds up to 40 M.P.H.  
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Contact your BANTAM Distributor, or fill in the coupon below and have Schield BANTAM send you a market kit telling you in detail how a BANTAM can fit your specific needs. **WRITE TODAY FOR YOUR FREE KIT.**

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## WORLD'S LARGEST PRODUCERS OF TRUCK-CRANES AND EXCAVATORS

Please send me my FREE KIT with special information on what the BANTAM will do for me.

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TYPE OF OPERATION PARTICULARLY INTERESTED IN:

RP-6

"to Buy Hauling Equipment for Ready Mixed Concrete" was one of the highlights of the 1953 National Ready Mixed Concrete Association convention, held in San Francisco. Both young men go all out in trying to help other producers work out an effective equipment cost system.

Through a year's check on mixer truck breakdown records, Bob was able to determine significant equipment cost data. He established that 25 percent of breakdowns came from flat tires, 20 percent were due to mixer motor trouble, and 13 percent were caused by truck motor failure. His reports further showed that brakes, axles and mixer repairs each accounted for 7 percent of total breakdowns, with driveshaft trouble accounting for 3.7 percent while mixer clutch trouble caused 2.3 percent of breakdowns. All other causes lumped together totalled 15 percent. The importance of breakdowns in your profit picture is realized when cost records show that individual road calls average out around a \$50 expense.

The keeping of a Truck Fleet Maintenance Operation Cost chart will point out such conclusions as the following:

1. That in a given size, certain makes of trucks cost less to operate than do other makes.
2. That it doesn't pay to overload equipment.
3. That lighter, cheaper trucks, in the final analysis, prove to be a costly investment.
4. That the increase in gas and oil consumption may point out the need for motor overhaul.
5. That the use of certain trucks and mixers should be discontinued.

Average costs on maintaining and operating truck mixing equipment should reflect the average age of equipment. In new equipment, maintenance costs and downtime should be at a minimum. As maintenance costs approach, in dollar and cents, operating costs, consideration should be given to discontinuing the use of such equipment. If maintenance costs on certain makes of trucks and mixers are high for the age of this equipment, further purchases of these makes should be avoided unless you are satisfied that it was your mistake in buying too light equipment.

Are you operating trucks, mixers and other equipment beyond their economic life because no one has checked on the frequency of downtime and the cost of repairs? Are your older mixers costing too much to maintain? Would new mixers with minimum upkeep give you a better profit picture? In our industry, an overly conservative

policy in hanging onto old truck mixers and other equipment is generally expensive because of increased maintenance and repair costs. An efficient producer through adequate downtime and repair cost controls knows when to get rid of the old landmarks.

Use a cost per cubic yard or per hour average to provide effective control over maintenance work. Plan monthly reports covering equipment downtime and repair costs to give you a fair check on your program's effectiveness. Couple such averages with other comparative standards. From good operators attempt to get maintenance cost figures based on net sales, capital investment, or broken down into costs per cubic yard or operating hour. If you are out of line with their averages, you know that real maintenance savings are possible.

I once asked a successful producer, who has held state association offices, what controls he had over his maintenance costs. He answered, "None at all. It costs more money to keep records than it does to do the work." Even in smaller organizations, such thinking cannot be defended.

The permanent success of any preventive maintenance program depends upon the continuous realization of the importance of thoroughness.

#### Michigan Draintile Meeting

"CONCRETE TILE FOR FARM DRAINAGE" was the theme of the Michigan Concrete Draintile Association convention at Holland, Mich., on October 26. Guests attended from Illinois, Indiana, Ohio and Michigan, including representatives of the Portland Cement Association and faculty members from Michigan State College. A tour was made of the W. E. Dunn Mfg. Co. plant.

Dick Allen, president of the association, opened the meeting, introducing Erich A. Zach, U. S. Department of Agriculture, State Conservation Engineer, who told about the role of concrete draintile in agriculture. Prof. W. A. Cutler, extension specialist in Agricultural Engineering and drainage engineer at Michigan State told about test installations of concrete draintile in four test fields in the state. It is planned to leave these installations in the ground for 25 years and then dig up the pipe to find out what type of draintile is best suited to that type drainage. M. L. Burgener from the Chicago office of P.C.A. gave a "flannel board" talk on "Concrete Draintile for Farm Drainage," and demonstrated the performance of draintile in mineral and peat soils. Cal Meredith of the Lansing office of P.C.A. also gave a short talk, pointing out the values of low absorption tile.

**Noted operators in  
Ready Mixed Concrete  
turn to...**



**GOELLNER, HAYDEN,  
MAULE, QUILLIAN,  
NELCH, SCHILLING  
—DOZENS MORE!**

Many well-known producers of ready mixed concrete such as Goellner, Hayden, Maule, Nelch, Quillian, Schilling, and numerous others, have all tried the new Rocket, and have voiced their approval with re-orders. Their reasons are plain enough. First, they like Concrete Transport Mixer Company's policy of dealing direct with the customer, enabling him to buy a high-quality, light-weight mixer for considerably less than other makes. Then too, they like the simplified design—no complicated mechanisms to add weight and increase cost. These are the men who attribute much of their success to rugged, dependable equipment—obtainable at exceptionally reasonable prices. Their endorsement is staunch testimonial to the high quality of products manufactured and guaranteed by Concrete Transport Mixer Company.



#### LOOK AT THESE FEATURES!

**Deep-Cut Chute for fast discharge.**

**Hydraulic Chute Control** makes the operator's job much easier, eliminates man-handling entirely!

**Standard Industrial Engines** truck-type transmission—service available at any automobile repair shop.

**Three-Point Suspension** cuts friction to minimum.

**Wear Points** constructed of tough, abrasion-resistant steel!!

**Operating Controls Grouped** for ease of operation, accurately controlled discharge.

**Positive Chain Drive** delivers flexible power, not affected by road shock, twisting of truck.

**Removable Inspection Hatch** with leak-proof gasket!



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#### MAIL THIS COUPON TODAY!

Gentlemen: Please rush me complete prices, literature, and terms on the following:

New Rocket Revolving Drum Truck Mixer  
 Hi-To Stationary Drum Truck Mixer  
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LOOK FOR  
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CUYAHOGA FALLS, OHIO

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CONCRETE PRODUCTS MACHINERY SINCE 1925

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USE: PURE—STRONG—CLEAN COLORS

11 REDS—from peach to burgundy

5 YELLOWS—from lemon to buff

15 BROWNS—from beige to chocolate

PLUS

BLACK—GRAYS—BLUES—ORANGE

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TWO DISTINCT TYPES OF GREEN

Distribution Points Throughout the Country

**FRANK D. DAVIS COMPANY**

2704 Santa Fe Avenue  
Los Angeles 58, California

### N.C.M.A. Convention Exhibits

(Continued from page 209)

uct, including shapes such as cove base units, corners, etc.

**Butler Bin Co.** Booths 99-100

Showing several models of bins; also automatic control equipment actuated by punched card.

**Calcium Chloride Institute**

Booth 110

Literature on uses of calcium chloride in concrete industry; exhibit to depict advantages of calcium chloride in concrete.

**Cedar Rapids Block Co.**

Booth 105

Dur-O-Wal masonry wall reinforcing; improved deformed side rods with electric butt-weld; new drip section Dur-O-Wal for cavity wall construction.

**The Celotex Corp.**

Celocrete Division Booth 157

**Chain Belt Co.**

Booths 34-35-36-37-44-45-46-47

**Champ Corp.**

Booths 15-16

Little Giant Champ "300" Tow-a-Lift equipped with Chrysler engine.

**Chicago Fly Ash Co.** Booth 164

Also will represent Detroit Edison Co. and G. & W. H. Corson, Inc. Will exhibit back-drop of pictures of concrete products plants using fly ash in their products; lighted sketch in center showing how and where fly ash is produced in a coal-burning power plant; graphs showing strength attained with fly ash in concrete.

**Cleaver-Brooks Co.** Booths 89-90

**Cleveland Vibrator Co.** Booth 180

Complete line of air and electrical vibration equipment, including type LSRR car shaker, and several air and electric vibrators on various types of bins and hoppers.

**Columbia Machine Co.**

Booths 152-153-188-189

Improved Model No. 10-twelve inch high machine; Model No. 12 of standard height; display of 12-in. high block gathered from plants now manufacturing block of the new height.

**Concrete Publishing Corp.**

Booth 198

Publisher of Concrete magazine.

**Concrete Transport Mixer Co.**

Booths 72-73

**Construction Machinery Co.**

Booths 86-87-88-101-102-103

Background display designed around projectograph, featuring colored pictures of the CMC line;

CMC Transcrete truck mixer; CMC Hoe-Boy mortar mixer; masonry saw and masonry cutting blades.

**Cook Bros. Equipment Co.**

Booths 20-21-22-31-32-33

Challenge exhibit includes new Pacemaker Model truck mixer, including Challenge Mixometer.

**Concrete Products—Rock**

Products Booth 107

**Curriers-Barbecues-Incinerators** Booths 1-2

**W. E. Dunn Mfg. Co.** Booth 202

**Edick Laboratories** Booth 160

**Engman Manufacturing Co.** Booth 158

Application of Emco anchor bolts with two-core concrete block; also other products.

**Erickson Power Lift Trucks, Inc.** Booths 74-75

**Ferro Corp.** Booth 111  
"Glasface" ceramic coat concrete block.

**Fleming Manufacturing Co.** Booths 194-195-196

**Forney's Inc.** Booth 14

**General Engines Co., Inc.** Booth 187

Rainbow Rock Machine, Model F-100. Machine features four-brick production cycle, complete compressed air operation.

**Heltzel Steel Form & Iron Co.** Booths 178-179

**Holland Machinery Co.** Booth 200

**Imperial Construction Equipment Co.** Booth 10

Continuous movies of company's truck mixers and block unloaders; display of Imperial Tel-A-Slump.

**Jaeger Machine Co.** Booths 23-24-25-26-27-28-29-30

New Model 3½ HM-E, "Mix Plus" truck mixer, equipped with open end loader; this size designed for maximum legal payloads on light trucks. Also will display Model 6½ HM-D, "Mix Plus" mixer equipped with sealed end loader and 2-compartment metering tank; unit handles payloads up to 9 cu. yd.

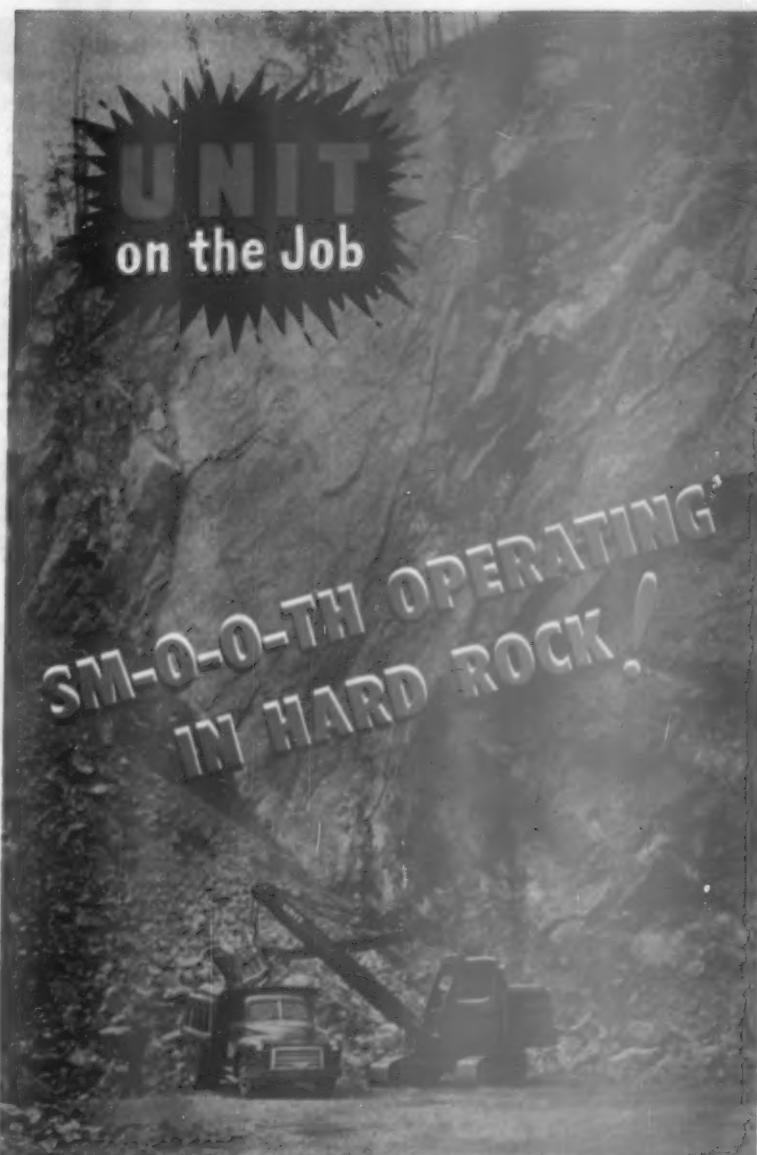
**J. A. Jones Concrete Machinery Co.** Booth 169

Concrete compression testing machine; also continuous mixer.

**C. S. Johnson Co.** Booths 78-79-80

Working model of water batcher and admix batcher with automatic controls; two-pen graphic recording unit with batch counters and time and date stamp.

**Kent Machine Co.** Booths 76-77-112-113



For working hard rock, UNIT with TORQUE DRIVE offers: Full, steady power without stalling engine — Increased digging power — Elimination of shock loads on machinery. Investigate these advantages and other UNIT features. Write for Bulletin No. U-1153.

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**1/2 or 3/4 YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY  
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All Models Capable to All Attachments

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FINEST  
TILE  
ROOFING

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ADD TO YOUR PRODUCT LINES this profitable building material item with national acceptance under the COMACO exclusive lease-franchise plan. Only one manufacturer-representative will be licensed in a territory.

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The process developed over a period of twelve years is simple and fast, permitting large, profitable production. Specifications meet local, state and Federal codes.

#### PATENTED INTERLOCKING DESIGN

Five beautiful architect-accepted styles and many colors to go with any architectural design use a patented interlocking feature which permits easy installation on roofs of homes, schools, churches, residences and public buildings.

#### COMPLETE EQUIPMENT AND PROCESS FOR MANUFACTURING

All machinery, molds and equipment for the actual manufacturing plus directions for the process are included under lease-franchise agreement.

A minimum investment is required. Write for complete information.

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#### The Knickerbocker Co.

Booths 81-108

Kwik-Mix Co. Booths 78-79-80

New 15 cu ft. Kwik Mix Moto-Bug power wheelbarrow and 7 cu. ft. fork lift units on display with Johnson batcher and accessories.

Le Roi Division, Westinghouse

Air Brake Co. Booths 4-5-6-7-8

Lith-I-Bar Co.

Booths 119-120-121-122-123-

142-143-144-145-146

New Lith-I-Bar block machine with new centralized control cabinet and agitator drive; new automatic front pallet return; Lith-I-Skip hoist; Lith-I-mixer with Ni-Hard liners and blades.

Littleford Bros. Inc. Booth 177

J. Fred Malane Booth 162

Marble Face Blocks, Inc.

Booth 197

Marblox samples—literature

The Master Builders Co.

Booths 165-166

Monarch Road Machinery

Co. Booth 106

Multiplex Machinery Co.

Booths 59-60-61-62

The Gene Olsen Corp.

Booths 114-115-116-117-

118-147-148-149-150

Rackman — a unit in GOCorp system of pallet and block handling system—receives block from machine, indexes them into decks and delivers empty pallets back to block machine; operations automatic. Also will show the King plain pallet block machine, making six units per operation; the Senior, plain pallet machine, making three block per operation; Junior Single and Junior Twin cored pallet block machines; Madison block splitter.

Oswalt Engineering Service Corp.

Booth 104

Park Tool Co.

Booth 3

Peerless Cement Corp.

Booth 101

Perfection Steel Body Co., Inc.

Booth 11

Pit & Quarry Publications

Booth 184

Precaster, Inc.

Booth 9

Pumice, Inc.

Booth 182

Volcolite lightweight aggregate and pozzolan; Volcolite colored split block display.

Arthur Rehberger & Son, Inc.

Booth 161

Reo Motors, Inc.

Booths 190-191-192-193

Reo V-8 engines and V-8 trucks.

# PRASCHAK HAMMERMILL CRUSHER

A MUST FOR EVERY  
MODERN PLANT

THIS CRUSHER HAS BECOME  
VERY POPULAR FOR CRUSHING  
CULL BLOCKS, ETC., TO  
KEEP BLOCK YARDS FREE  
FROM UNSIGHTLY CULLS,  
AS WELL AS FOR CRUSHING  
CINDER CLINKERS AND OTHER  
LIGHT WEIGHT MATERIAL

**\$462.00** (complete, less motor and drive)

#### Other Equipment Available:

Automatic 400 Block Machines,  
5 Sizes Mixers, Bucket Elevators,  
Conveyors, Hand and Power Lift  
Trucks, Hammermill Crushers,  
Rotary Screens, Power Offbearers

#### COMING SOON!

Fully Automatic Plain Pallet Block  
Machine — New and Improved  
Design — Worth Waiting For —  
Details to Follow.

WRITE TODAY

PRASCHAK MACHINE CO. MARSHFIELD, WIS.

# SIMPLE!

WE BELIEVE you'll agree that HYDROBLOC is the simplest fully-automatic concrete block machine you've ever seen.

YOU START-STOP the automatic HYDROBLOC with one switch mounted on your offbeater. You make a changeover in minutes to practically any type block. You wash your machine down with a stream of water, with absolutely no damage to the machine.

CAMSHAFT TIMING, as trouble-free and foolproof as the timing of your automobile engine, is the heart of the HYDROBLOC machine. It completely eliminates the need for solenoid valves and all of their delicate electrical controls, and provides the simplest possible means of operating the hydraulic cylinders of the machine. All these controls are enclosed in the dirt-free control panel completely isolated from the rest of the machine.

The HYDROBLOC is low in initial cost, and with its sturdy simplicity throughout, it costs little to maintain. All parts are easy to get at, and you have full protection everywhere from grit and vibration. The simplified attachment setup has minimized replacement cost of the wearing parts of attachments and reduced changeover time to a minimum.

YOU HAVE dual vibration, and a positive height control that requires that blocks all the way across the mold box must be down to proper height before the stripping operation begins. And a lot of features you've often wished you had.

WRITE TODAY for the complete picture story of the HYDROBLOC, or see us at the HYDROBLOC booth at the NCMA show in Cleveland.



HYDROBLOC'S AUTOMATIC FRONT PALLET RETURN reduces your labor force to the minimum. It completely cleans and oils each pallet as it is hydraulically moved through the pallet return. There are no troublesome chains, cams, cam rollers, or electrical controls to give out, and the entire pallet return easily pivots away from the machine for cleanup work.

## HOLLAND MACHINERY CO. HOLLAND, MICHIGAN

## Subdivision Contractor Pours 150 FOUNDATIONS A DAY!

with help of



### BAUGHMAN

MODEL TST-10  
CEMENT BODY and STORAGE TANK

- 1 From concrete mfg. into Baughman TST-10 Bulk Cement Body.
- 2 Unloaded from Baughman Cement Body into Baughman horizontal screw conveyor which feeds Baughman vertical screw conveyor alongside storage tank.
- 3 Fed into either (a) Baughman Storage tank, (b) Batch mixer.
- 4 If cement is in storage tank, from storage into Baughman underbin conveyor to vertical screw into spout for batch mixer.

### MOVE BULK CEMENT the EASY, MODERN WAY!

- Quickly loaded through weatherproof roof hatches.
- Twin auger discharge.
- Custom-built for truck or trailer.
- Powered by auxiliary engine, power take-off or fifth wheel.
- Patented air-cell construction prevents packing.
- Lengths from 9 to 35 ft.



WRITE for  
Bulletin A-348

BAUGHMAN MANUFACTURING CO., INC.

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**The case of  
the arching  
soap chips...**



No amount of sweat and tears in a Detroit soap plant seemed to keep production moving smoothly. Arching soap chips clogged up the bins and hoppers and brought everything to a standstill.



That is, until a CLEVELAND vibrator was installed and got things back into full swing again.

*There's no limit to the range of materials a CLEVELAND will move. Our detailed literature will describe the vibrator for your problem.*

**AIR and ELECTRIC**

*Bin Stuck Lately?*



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**John Selden** Booth 167  
**Shore Engineering** Booth 109

Data and installation costs on steam curing installations for concrete block plants; including designs for high pressure autoclaving with various types of rack loading.

**Siliphane Corp. of America** Booth 199  
**The T. L. Smith Co.** Booths 48-49-50-51-52

**Solvay Process Division, Allied Chemical & Dye Corp.** Booth 168

Feature use of calcium chloride in concrete products.

**Southeast Ready-Mix Concrete Co.** Booths 17-18-19

Working model and a standard Travel Batcher; literature.

**Southwest Industries, Inc.** Booths 183-184

**Spray-O-Bond Co.** Booth 154

**Standard Dry Wall Products, Inc.** Booths 172-173

Thoro System products — Torsoseal, Quickseal, Waterplug for water-proofing and decorating.

**Stearns Manufacturing Co., Inc.** Booths 91-92-93-94-95-96-97-98

**Thomas Steel Forms Co., Inc.** Booth 159

Steel forms for casting septic tanks and burial vaults.

**Towmotor Corp.** Booths 128-129-136-137

Model Lt-60 fork lift truck, capacity 5100 lb. at 24-in. load center, lift 108 in., overall lowered height 87 in., overall extended height 155½ in., six forks.

**Tracto-Lift Co.** Booths 155-156

**Universal Door Carrier, Inc.** Booths 170-171

**Vibro-Plus Products, Inc.** Booth 163

Demonstrate vibration in casting concrete pipe and products; also for material handling.

**Western Welding & Mfg. Corp.** Booth 106

**The White Motor Co.** Booths 53-54-55-56-57

**Willard Concrete Machinery Sales Co.** Booths 58-63

**Al Willis Sales Co.** Booth 205

**Worthington Corp.** Booths 64-65-66-67-68-69-70-71

KELLY CONCRETE INC., has resumed construction of a ready-mixed concrete plant at Flint, Mich., following the signing of an agreement calling for union labor and sub-contractors, which ended a week-long strike.

**Your Customers  
will say...**



when you offer them a choice of

**23**

**DIFFERENT  
CEMENT & MORTAR  
COLORS**

Made by Williams, this is the broadest selection of fine Cement and Mortar colors on the market. By offering your customers a choice of 23 shades, you can quickly and easily settle upon one having the exact chemical and physical properties your color specification requires.

**CEMENT COLORS BY WILLIAMS**

Here you have a choice of 18 shades — 6 Reds, 3 Greens, 3 Browns, 3 Yellows, 1 Black, 1 Blue, and 1 Orange. Each shade is manufactured to meet the most exacting specifications for cement work—as recommended by the American Concrete Institute and the Portland Cement Association.

**MORTAR COLORS BY WILLIAMS**

Here you have a choice of 5 different shades — one shade in double strength red, light buff, dark buff, chocolate and black. Each of these colors may be used with excellent results with any standard mortar mix or with a ready-made Bricklayer's Cement.



Write today for color samples and complete technical information on how Williams Cement and Mortar Colors give you superior results. Address Dept. 10, C. K. Williams & Co., Easton, Pennsylvania.

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# For Batching— A RICHARDSON AUTOMATIC PROPORTIONING SYSTEM

*pays off!*



This Richardson installation is helping a west coast cement-products manufacturer reduce operating costs and improve control of product quality. Replacing a less accurate continuous weighing system, this automatic batch proportioning system insures exact amounts of each ingredient in a four-ingredient mix. A single operator stationed at the remote control panel, runs the system by selecting each ingredient on a series of weight selector dials. Component interlocks prevent out-of-sequence operation and insure continuous performance.

In this system one Richardson automatic bulk scale cumulatively weighs the sand, clay, crushed rock, and Portland cement used in the process. Following discharge to a surge hopper, a tare check circuit verifies the scale at correct empty balance before repeating the cycle.

The finished product mixes are packaged by a Richardson high-speed packing scale located beneath the surge hopper. The automatic batch system guarantees correct proportions in the bag.

Why not write today for full information, no obligation.

# Richardson

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Toronto • Havana • Mexico City • San Juan



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Masonry Expert . . .

*Butt Weld*  
**DUR-O-WAL**  
WITH TRUSSSED  
*Design*

**6 Reasons  
why Dur-O-wal is  
STRONGER, FASTER  
AT LESS COST**

Patented Dur-O-wal Sets  
the Pace for Reinforcing  
Quality and Performance

Masonry industry leaders throughout the nation hail butt-weld Dur-O-wal for performance, quality and economy. Masons prefer Dur-O-wal because it lays flat . . . works fast . . . handles easily.

The masonry industry prefers Dur-O-wal because it safeguards the beauty of masonry by providing both vertical and horizontal reinforcing in all types of masonry walls.

- Mechanical Bond every 8 inches of wall
- High Tensile Steel (100,000 p.s.i.), shipped in convenient 10 foot lengths
- Double Mortar Lock at each weld
- Electric Butt Welds place stiff rods on a single plane
- Knurled Side Rods lay straight and flat due to hardness of steel
- Trussed Design causes side rods to work together.

GET ALL THE FACTS TODAY from the Dur-O-wal plant nearest you. Literature now available with new research data from independent tests. Request information today.

- Dur-O-wal Products, Inc., P. O. Box 626, Syracuse 1, New York
- Dur-O-wal Div., Dept. 659, Cedar Rapids Block Company, Cedar Rapids, Iowa
- Dur-O-wal Inc., 165 Utah St., Toledo 5, Ohio
- Dur-O-wal Division, Frontier Manufacturing Co., Phoenix, Arizona
- Dur-O-wal Products of Ala., P. O. Box 5446, Birmingham 7, Alabama

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\* Advances architectural design and beauty  
\* BOOSTS YOUR PROFITS!



### \* Add a BES-STONE BLOCK SPLITTER to your plant NOW

You'll find it full of profit opportunity because the trend toward BES-STONE Split Block is strong! Architects, contractors, owners WANT this beautiful, modern, colorful "quarried stone" effect that is so ideal for all structures . . . commercial, institutional, residential. BES-STONE Block Splitter makes straight line cuts . . . no dull block. Automatic hydraulic operation . . . up to 960 Split Block per hour . . . safe, quiet . . . a big money maker!

**BES-STONE**  
*the Split Block  
with Character*



TWO SIZES:  
18" and 24"  
Automatic operation —  
960 Split Block per Hour

Write for  
BES-STONE  
Bulletins  
95A and 100

**BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.**

### "Cleaned with a whisk broom, putty knife and . . . EDI-COTE 103 in half the time!"

says owner\* of this  
17 year old mixer  
that looks like new.



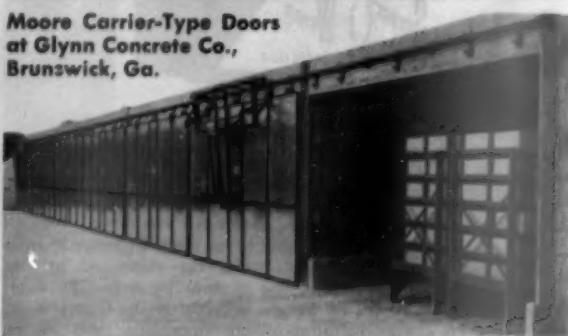
EDI-COTE #103 is a revolutionary new release agent that prevents concrete from bonding to mixer blades and ports. EDI-COTE #103 eliminates the use of air guns and sledge hammers in the daily clean-up. EDI-COTE #103 creates a non-hardening film which prevents the forming of a bond between concrete and metal. It adheres rigidly and will not dissipate due to chemical action or abrasion. One application of EDI-COTE #103 will remain effective throughout the longest working day. EDI-COTE #103 can be applied with brush or spray. Shipped in 30 and 55 gallon drums and 5 gallon cans. Order EDI-COTE #103 today!

\*Frank Erdman & Son, Milwaukee, Wisconsin

**EDICK LABORATORIES**  
DEPT. 21-E — 427 WEST NATIONAL AVE.  
MILWAUKEE, WISCONSIN

Booth 160  
Concrete  
Industries  
Exposition  
January 24-27  
Cleveland, Ohio

Moore Carrier-Type Doors  
at Glynn Concrete Co.,  
Brunswick, Ga.



### Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs—inside the kiln—with Moore Aluminum-Insulated Doors. They improve curing conditions—save steam—last longer.

Send us dimensions of present door openings for quotation.

**MOORE DRY KILN COMPANY**

Oldest and Largest Manufacturers of Lumber and Veneer Dryers  
JACKSONVILLE FLORIDA BRAMPTON ONT. VANCOUVER B.C. NORTH PORTLAND OREGON  
CANADA CANADA

## Southeastern Meeting

(Continued from page 199)

he showed how nobody gains from cut pricing. The accompanying graph was used by Mr. Whitesell to point out the serious effects of price cutting in their relation to the maintenance of profits, for which no one should ever be apologetic.

### Siporex

An unscheduled talk was presented by Bengt Lundgren, manager of the foreign department for Internationella Siporex AB of Stockholm, Sweden. Mr. Lundgren had just arrived from Montreal, Canada, where a Siporex plant is being installed and left, immediately after the St. Petersburg meeting, for Mexico City where a second plant on this continent will soon start production. Mr. Lundgren showed a movie on the manufacture of Siporex concrete units at the new \$2 million Skelleftehamn plant in Sweden and a second film showing erection and various job applications.

Siporex was developed 20 years ago in Sweden and has gained wide acceptance in recent years. Presently, there are five plants in Sweden and ten in other countries. The process differs from any in this country for the manufacture of precast products. Siporex is made from a blend of portland cement and finely ground sand, to which aluminum powder and certain additives are mixed. The mix is of a very wet consistency when poured into molds. After a 6-9 hr. setting period during which a gas is formed to create a cellular structure, the concrete is cut to exact dimensions by precision machinery fitted with steel cutting wires. The units are then autoclaved at a steam pressure of ten atmospheres for a period of 1 hr., during which a mono-calcium silicate is formed which is the basic substance of Siporex. A total of 30 hr. is required for the complete cycle, after which the units are ready for delivery.

Siporex is made of various densities, from 25 lb. to 50 lb. per cu. ft. It has a uniform cellular structure, is white-grey in color, has high compressive strength with lightness in weight, has good insulation value, is resistant to fire, practically free from any shrinkage and may be sawed, nailed or bored by ordinary tools. It is made either with or without reinforcing and into wall slabs, roof decks, floor slabs, solid block and other shapes. Upwards of 100 million sq. ft. of slabs alone have been produced thusfar. Two of every three roofs being installed in Sweden are Siporex. Erection of Siporex buildings is being done at remarkable speed with very little labor required in construction.

# 5 and 6 C.Y. WILLARDS

## have Positive Control

...TO STOP POUR  
...TO START POUR

INSTANTLY!



A. Charge-mix or discharge lever, B. Main clutch lever, C. Water valve, D. Pump clutch lever, E. Combination throttle and drum brake, F. Ratchet hoist for chute.

### ...Controls are Centralized

**THERE IS LESS SPILLAGE**, less trouble placing concrete with a big 5-6 c.y. Willard because the controls are centralized at the rear and because a Willard has a combination throttle and drum brake. You can stop or start the pour in an instant—no spilling, it can pour a cupful or a full load.

Note how main clutch, pump clutch, water valve and drum controls are conveniently located. Here is the truck mixer with the balance for extra large payloads. Drum drive is by Chrysler 6-engine with fluid drive. Has low center of gravity...short wheelbase mounting...and many exclusive features.

See it at your Willard dealer's or write for bulletin.

Manufactured in Los Angeles, California and Gallon, Ohio

WILLARD CONCRETE MACHINERY SALES CO., 11700 Wright Road, Lynwood (Los Angeles County), Calif.

## WILLARD TRUCK MIXERS

ROCK  
PRODUCTS  
FEATURES  
TIMELY  
INDUSTRY  
NEWS  
EACH  
ISSUE

### MAKE MORE MONEY MAKING

"THE LARSEN  
LIFETIME"  
FENCE POST

Add this profit-making item to your present line. It makes a perfect all-in for odd times—and can readily be developed into a major production unit. You can start with a few molds and add more as your business grows.

Write for FREE Bulletin RSS.

CONCRETE POST FORM COMPANY  
Box 368  
Cedar Falls, Iowa

**put the *Erickson* "workhorse team"**  
**to work in your plant!**

FORK LIFT TRUCK



Handles and stockpiles cubed blocks—loads delivery trucks. Model F-6R shown, capacity 6000 lbs. Other larger and smaller sizes for any job.

Here's the pair of Ericksons that have proven themselves the **BACKBONE OF BLOCK PRODUCTION**. Erickson's rugged dependability and long life have won its reputation as "the workhorse of lift trucks". Erickson trucks are custom-built to fit your needs.

PLATFORM TRUCK



SEE THEM AT BOOTH 74-75

**N. C. M. A.**  
 CONVENTION

CLEVELAND, OHIO • JAN. 24-27, 1955

**ERICKSON POWER LIFT TRUCKS, Inc.**

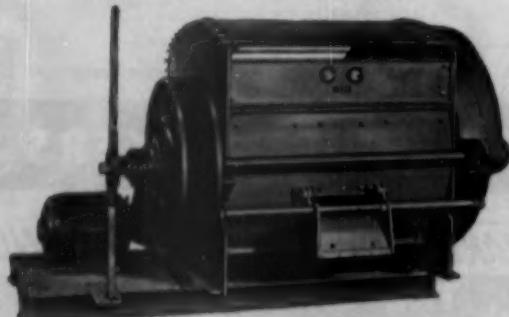
33 Anthony Blvd. 4 University Ave., N. E. Minneapolis 13, Minn.

Picks up all block racks from the ends and places them close together in kiln—no wasted space. A sensational new Erickson platform design is on the way.

## THE FAMOUS C. G. MIXER

SIZES . . 7 . . 14 . . 24 . . 36 . . 50 of CAPACITY

AND  
 BLOCK SPLITTER



Equipped with . . .

Ni-Hard or Abrasion Resisting  
 steel liners Motor and V. belt  
 drive or clutch pulley drive

Write for literature and prices

**DES PLAINES CONCRETE MACHINERY CO.**  
 930 North Avenue . . . Des Plaines, Illinois

**\$ Add to Block Plant Profits \$**  
 by Promoting **SOFFIT Floor Filler Block**



Provides a Natural Base for  
 RADIANT HEAT Jobs!

Now — You can add to your profits by supplying customers with Soffit Block for floors and roofs, in addition to Vibrapac Block for walls. Soffit Block floors are permanent and fire-proof. They form an ideal base for installing heating coils for radiant heat jobs. The textured and patterned ceiling has maximum acoustical and insulation values . . . can be plastered, if desired.

Produce SOFFIT Block on  
 Your Besser Vibrapac  
 The same machine that makes high quality wall block, also produces Soffit Block, using the same set of Plain Pallets.

Write for Bulletin No. 77

**BESSER  
 COMPANY**

ALPENA, MICHIGAN, U. S. A.  
 Complete Equipment for  
 Concrete Block Plants



# CONCRETE BURIAL VAULTS

AMERICA'S FINEST MOLDS AND LOWERING DEVICE



BERG VAULT CO.  
EQUIPMENT DIVISION  
1820 LUCAS HUNT RD. ST. LOUIS 20.

NOW MORE THAN 150

LICENSED MANUFACTURERS Producing

Patented  
**homeward**  
Concrete STEPS

A Small Investment  
That Pays Big  
Dividends

Homeward all metal steps are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write  
ROGER F. WILLIAMS, Licensee  
3420 S. W. 9th St. Des Moines (15), Ia.

## WHERE TO BUY

### THE BUY OF A LIFETIME FOR SALE

#### COMPLETE BLOCK PLANT In Operation NOW!

One Kepler Block Machine (Plus two machines of same make for parts)  
Twelve Thousand Cored Pallets—4", 6", 8", 10", 12". Plus corner and sash pallets, also pallets for 4" and 10" termite blocks.

#### Mold Boxes for All Sizes

200 pans for 24"x24"x2" stepping stones. (We make these stepping stones on our block machine. 200 stepping stones in 3 hours.)

35 Steel Racks (72 and 48 block capacity)

One two bag mixer complete with starter and a 15 HP motor.

One "Truckman" high lift.

Two hand lift trucks.

Two 1960 Dodge trucks 1½ tons.

We make 2,800 blocks in 8 hrs.

Make 4 blocks at a time.

We are making blocks and will demonstrate.

Price: \$8,000.00

#### Roth Bros. Concrete Block Co.

RD. 3, IRWIN, PA.

On Lincoln Highway (R. 30) one half mile east of Turnpike Entrance

TEL. UNDERHILL 3-7750

### FOR SALE — TERMS

Northwestern Indiana — complete Besser Vibrapac block plant or equipment only producing 720 eight inch or equivalent per hour. Excellent condition. Bargain.

BOX M-85, CONCRETE PRODUCTS  
309 W. Jackson Blvd., Chicago 6, Ill.

**BUY**  
U.S.  
SECURITY  
BONDS  
**NOW!**

### BLOCK PLANT SUPERINTENDENT WANTED

We need a block plant superintendent to handle the maintenance of a Besser Super-Vibrapac Machine, and other allied equipment, such as Clark Fork Trucks and Champion curing equipment. Our total annual production is about 1,500,000 blocks. We want a man who has had block plant experience, is honest and believes in a quality product, and can operate a plant as efficiently as it should be. If you qualify, we guarantee that you will be satisfied with the contract we offer.

### BOWDEN CONCRETE PRODUCTS

2175 E. PERSON AVENUE, MEMPHIS, TENN. PHONE: 4-7345

### FOR SALE

50 ft. Besser mixer and skip hoist.  
70 racks for 16x16x16 machine.  
3000 ft. 17" x 18" pallets.

3 H.P. 3 phase captain car pulier,  
1—Hydromatic tag line for 1½-1½ yd. crane. Bargain.  
EAST GARY CONCRETE PRODUCTS, INC.  
2399 De Kalb St., Gary, Ind.  
Phone East Gary 2-1392

### BUILDERS' SUPPLIES

Sales \$250,000 Year—Ready Mix Concrete  
Same owner 28 years, present sales \$20,000 monthly, fully equipped yard and new batching plant, office, warehouse, garage, etc., 11,000 ft. bldg. space, R.R. siding, 8 trucks, large building and new industrial city, with property.

THE APPLE COMPANY, Brokers  
1836 Euclid Ave., Cleveland, Ohio MA 1-3745

### FOR SALE

1963 L-9 Lith-1-Block 2 block machine complete with 4", 6" & 12" attachments, 47-90 block racks, 1400 18 x 18 x 5/16 plain pallets. Stearns 30 ft. mixer and skip hoist. Now in operation and prior to sell.

MILLER BLOCK CO.  
1714 W. Franklin St., Evansville 12, Ind.  
Phone 3-2844

### FOR SALE

300 sash pallets—8" pressed steel. Ea., .40c  
300 corner pallets—8" pressed steel. Ea., .40c  
1 Barrett Lift Truck,  
capacity 3800 lb. .... \$150.00  
All in good condition.

BEN WAANDERS BLOCK CO.  
Phone 1443 Allegan, Mich.

### CARPENTER STEEL GREASE TRAP FORM

Very good condition, size 39½" x 39½" x 38".  
special cover form and turner included.  
Price \$385, consider trade for Quinn Concrete Pipe Forms.

DALMO CEMENT PRODUCTS CO.  
Fairbury, Nebraska

### FOR SALE

4500—8 x 8 x 16 "BABABA" Pressed Steel Pallets.

1500—12 x 8 x 16 "PARADOX" Pressed Steel Pallets.

6000—4 x 8 x 16 "ZONAL" Pressed Steel Pallets.

1500—8 x 8 x 16 "BATON" Pressed Steel Pallets.

No reasonable offer refused.

1—Barrett Hand Lift Truck.

1—Bonded Cinder Crusher.

½ Yard SAUERMAN HIGH LINE ASSEMBLY. Complete with 82 feet Mast, New ½ yard Bucket, all Guys, Cables, Sheaves, 2 Speed Winch, 50 HP Motor, V Belt Drive.

### ATHENS BUILDING MATERIALS CO.

North McKinley Avenue P. O. Box 199  
Athens, Ohio Phone 3-1866

### KEEP ABREAST

WITH

INDUSTRY TRENDS

THROUGH

ROCK PRODUCTS

## WHERE TO BUY

### GOOD WILL BUILDERS

For the block manufacturer. Help your contractors and bricklayers get quicker, easier and straighter masonry construction with U.B. tools that carry YOUR advertising. U.B. Corners, Linestratches, Line Pins and Twists. We also wholesale a full line of tools for the blocklayer. Write for catalog and prices.

UNITED BUILDERS  
1852 Lindberg Drive  
Muskegon, Michigan

### FOR SALE

One F. C. George Automatic Block Machine, 400 Series, with off-bearer less compressor, complete with 2,000 aluminum pallets (8 x 16) plus other aluminum pallets. Excellent condition, priced for quick sale.

#### Brevard Concrete Products

P. O. Box 1027      Cocoa, Florida

### FOR SALE

Go-Corp Crown Prince, 1 year old. Makes 2 blocks at a time. Plain pallet. Pallet feeder. Attachments for 4, 8, and 12 inch blocks. Turntable. Offbearer, 2,000 pallets. 45 racks. Truckman. All can be seen in operation. Reason for selling, installing larger equipment.

#### W. L. MATTOX CONCRETE PRODUCTS

556 Daniel Avenue      Newark, Ohio  
Diamond 4-3920

### FOR SALE 1500 4" Modular Size Pallets. Clean.

TRI-CELL BLOCK CO.,  
730 11th St., Hennepin, Minn.  
Phone 1096

**FOR SALE**  
Short Wheelbase Truckman (for picking up racks from the side). Used ½ hr. A real bargain.  
Lewis Shepard hand lift truck. 2300 lb. capacity.  
Barrett hand lift truck. 2300 lb. capacity.  
W. N. HALL & SON  
46 S. Seventh St.      Allegany, New York

Plant  
Layout  
Design  
Block  
Machinery

**WITTEMANN MACHINERY COMPANY**  
FARMINGDALE, NEW JERSEY  
Specialists in Concrete Products Equipment  
Eastern Representatives of the  
**COLUMBIA MACHINE WORKS**, Vancouver, Washington

**Markets are not merely people, but people who buy.  
Advertise your used equipment in ROCK PRODUCTS**

### FOR SALE

1—Model 9 Jolitecrete complete with Power Offbearer, 4", 8", 12" attachments.  
7—¾"—80% Cast and aluminum Pallets.  
3—¾"—Zonal Pressed Steel Pallets.  
11—¾"—58% (B17) Cast Pallets.  
1—84" Turntable.  
Equipment in very good condition. Any of above items can be purchased separately.

**Ionia Concrete Products, Inc.**  
IONIA, MICHIGAN

### MOLDS with "BUILT-IN" BRAINS & ACCURACY

"ONE-PIECE" Metal Molds for: SPLASH BLOCKS STEPPING STONES SILLS & COPING	CHIMNEY CAPS DISTRIES, BOXES SEPTIC TANKS	R. J. SPILLMAN CO. 1543 E. High St. Columbus, Ohio

### FOR SALE

#### AT SACRIFICE PRICES

#### USED MOLD BOXES

#### FOR BESSER VIBRAPAC MACHINES

2 Mold Boxes to make 3—7½" x 15½" Blocks  
2 Mold Boxes to make 9—11½" x 12½" Blocks  
1 Mold Box to make 3—7½" x 15½" Full Cut Out Header Blocks.

Above in Good Condition with Stripper Heads ready to use. Parts also available to make square corners, bull nose corners, bull nose arch blocks, halves, etc.

**Domine Builders Supply Corp.**  
156 Gould Street, Rochester, N. Y.  
Browning 6330

### COLOR YOUR CONCRETE!

### SMITHKO

LIMEPROOF CONCENTRATED DRY COLORS  
Write for samples and brochure. Getting Results With Color in Concrete and Cement Products

SMITH CHEMICAL & COLOR CO.  
33 JOHN ST. BROOKLYN 1, N.Y.

### EQUIPMENT BARGAINS

150-ton Mobile Concrete Batch Plant  
10' x 24' Conveyor & Belt  
3 Ready Mix Trucks & mixers  
TD-8 Crawler Loader  
Double Drum Hoist

**Montana Ready Mix Co., Inc.**  
Route No. 3, Missoula, Montana

### PLAIN STEEL PALLETS

Furnished from prime domestic open hearth mild steel plate. Guaranteed Quality

Flat • Square • Angles  
any size or thickness

GARY STEEL SUPPLY COMPANY  
2390 S. Springfield Avenue      Chicago 23, Ill.  
Crawford 7-2825

### LOWER COST

### PACKER-HEAD WINGS

Proved to last as long or longer—yet cost considerably less. Write for prices.

**TEXAS FOUNDRIES**  
LUFKIN, TEXAS

### FOR SALE

2 Doswell-Kover Air Seal Vault Molds—one sack Jaeger Mixer with power loader, electric motor and speed reducer—12 cu. ft. Products Mixer (nearly new) with electric motor, speed reducer & belt conveyor for charging—all of this equipment is in good condition.

**HEREFORD CONCRETE PRODUCTS, INC.**

4464 Easton Avenue, St. Louis 13, Mo.

### WANTED

Used equipment to set up new block plant—need everything.

**BOX M-89,  
CONCRETE PRODUCTS**  
309 W. Jackson Blvd., Chicago 6, Ill.

### FOR SALE

Pressure Head Extensions and Miscellaneous parts for Stearns No. 15 Block Machine.

**Box M-90, Concrete Products**  
309 W. Jackson Blvd., Chicago 6, Ill.

### WANTED

Small or medium block machine, Automatic—150 FMC or its equivalent. Reasonable and in good working order.

**Kingsley Volk Concrete Prod.**  
Clearwater Lake, Wis.

### Try A Small Ad

### For Quick Results

Dobbs Two-Block machine — 4"-6"-8"-10" molds, 12 cu. ft. mixer, just rebuilt, 20 steel racks, 1400—8" and 1180—12" wood pallets, Barrett-Craven Hand Lift Truck. All clean, excellent condition \$2200.

**JAMES BLOCK CO.**  
Morristown, Tenn.

### FOR SALE

No. 7 Jolitecrete with 4", 8", 10" and 12" attachments, racks and pallets. Priced for quick sale. Good condition.

**Fergus Concrete Products Co.**  
Box 271, Fergus Falls, Minn.

## WHERE TO BUY

### COLORS For Cement and Concrete

COLOR YOUR CONCRETE WITH LANSO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:

### Landers-Segal Color Co.

78 Delavan St. • Brooklyn 81, N. Y.

### USED CONCRETE BARGAINS

- Smith Model 42Z, 112-S, 4 Cu. Yd. Stationary Concrete Mixer with pneumatic tilt and control valve, 75 HP GE 1160 RPM, 440 V, 60 Cy., 3 Phase electric motor (can be rewired to 230V) Complete with Controls.
- Model H7 Fuller-Kinyon Cement Pump, capacity 350-380 bbls. per hour. Without power—requires 100 HP.
- Model D Fuller-Kinyon 8" Cement Unloader with 125 HP, 440 V, 60 Cy., 3 Phase, 1200 RPM electric motor, capacity 400 bbls. per hour.

—Subject to prior sale—

### COAST EQUIPMENT COMPANY

444 8th Street, San Francisco

### FOR SALE

Complete Equipment for small block plant including:

- Kent Vibra Tamp Machine.
- Kent Continuous Mixer water control & regulator.
- Kent Elevator.
- Stone aggregate hopper holds one day's production.
- 8" Mold box complete with base and vibrator.
- 12" Mold box complete with base and vibrator.
- 20 New steel racks 64 cap never used.
- 20 Used steel racks 48 cap.
- 2 Hand lift rack trucks.
- Pallet dumper.
- Attachments for Sash Corner Bull Nose and Half Block.
- Approximately 1800 steel pallets.
- 1 Scotch Marine 25 horse boiler with piping and steam regulator.

The above equipment is in excellent condition and complete. Nothing more is needed to produce first class block from any aggregate.

\$4,500.00 F.O.B. car yard.

### Union Builders Supply & Fuel Co.

9601 Cassels Ave. — Tel. Michigan 1-8888  
CLEVELAND 5, OHIO

### JOHN K. SELDEN CONSULTANT ON AUTOCLAVING

Webb Ave. at 2450 William St., Buffalo 6, N. Y.

Raw Materials Formulation Research  
Products Processes Equipment Development

### FOR SALE

Furnace Block Business. 2 Block Columbia machine. One year old, actually used 6 months. Cash or terms. Phone Davis 5-8112.

KENNETH N. BOYD

522 S. Miller Avenue, Farmington, New Mexico

### FOR SALE

One Praschak Automatic "400" block machine with 500 12" steel pallets, 1250 8" steel pallets and 25 steel racks. Installing larger equipment.

Hartford Concrete Products  
HARTFORD, WIS.

### UNBREAKABLE

### PALLET RINGS

Write for full information  
TEXAS FOUNDRIES  
LUKIN, TEXAS

### INCREASE PROFITS INCREASE

Production up, Quality up

### MOULD-RITE

Fits All Block Machines

### NO. HOLLYWOOD CONCRETE TILE CO.

12323 Sherman Way  
No. Hollywood, Calif.

### CONCRETE BRICK COLORS CEMENT COLORS MORTAR COLORS

Made by  
BLUE RIDGE TALC CO., INC.  
Henry, Virginia

### FOR SALE

Fork and platform power lift trucks, used and guaranteed factory rebuilts.

ERICKSON POWER LIFT TRUCKS, INC.  
Saint Anthony Blvd. & University Ave. N.E.  
MINNEAPOLIS 18, MINNESOTA  
Phone—Sterling 1-9508

### GOOD WILL BUILDERS

Advertising necessities for the block industry. Line Pins, Twigs, Corner Blocks, Calculators. Complete catalog on request.  
GERSON CO.

82 Deering Rd. Mattapan, Mass.

### FOR SALE

New Quinn Standard pallets and tongue headers for concrete pipe forms.

- 18 ea. Base Pallets for 12" pipe.
- 12 ea. Base Pallets for 15" pipe.
- 18 ea. Base Pallets for 18" pipe.
- 12 ea. Tongue Header for 12" pipe.
- 1 ea. Tongue Header for 15" pipe.
- 1 ea. Tongue header for 18" pipe.

MADISON CONCRETE PIPE & PRODUCTS CO., INC., 2725 Lexington Ave., Madison, Wisconsin

### Small Block Plant Owner

I have quite a supply of used machinery that are required by my concrete mixers, masons, formers, producers. Some of these setups are in very good condition. As they are a surplus to me, I will sell on any reasonable terms with payments as low as \$50.00 a month.

Mid-Western Concrete Equipment Co.  
Box 646 Mukwonago, Wis.

### FOR SALE

One only C. S. Johnson Aggregate Elevator 60 T. P. H., single strand chain type 110H, crows nest and spouting to pivoted distributor, 10 HP electric drive. Elevator height approximately 79 feet from center of shaft to center of shaft.

The above equipment has been repossessed and never used. It is offered at bargain price. Can be inspected at our yard.

### W. B. THOMPSON COMPANY

Iron Mountain, Michigan  
Phone 3121

### STOP that WATER

#### WITH FORMULA NO. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

MAYNES PRODUCTS CO., OMAHA 3, NEBR.

### FOR SALE

#### STONEPLITTER (USED)

Will split blocks up to 8" high and 28" in length. Priced reasonable.

BOX M-84, ROCK PRODUCTS  
309 W. Jackson Blvd., Chicago 6, Ill.

### FOR SALE OR TRADE

GO CORP concrete semi-automatic block machine; eight (8) inch mold box; two bag mixer, pallets and racks. This is a complete set-up for a small block plant.

CHAMBERLAIN MASONRY PRODUCTS CO.  
CHAMBERLAIN, SOUTH DAKOTA, PHONE 51

### WANTED

Used 1-sack concrete mixer for cement block plant, within radius of 600 miles. State condition and price.

VAN'S BLOCK PLANT  
2817 W. 12th St., North Platte, Nebr.

### WANTED AT ONCE

1—Used Guillotine for cutting stone. Quote Location and Price.

The Shortworth Company  
165 Broadway, New York 6, N. Y.  
Cortland 7-2971

KEEP ABREAST

WITH

INDUSTRY TRENDS

THROUGH

ROCK PRODUCTS

**SAVE FUEL • REDUCE CURING TIME  
CUT COSTS • UP PROFITS**  
with **Standard KILN DOORS!**



**WHERE AISLE SPACE IS LIMITED**  
STANDARD sliding doors need no aisle space. The carrier-type door (above) requires 15" minimum clearance above top of door opening. A vertical sliding door, counterweighted for easy opening, is also available.

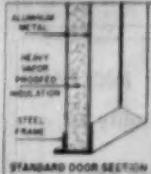


**WHERE HINGE-TYPE DOORS ARE PREFERRED** Choose from two STANDARD hinge-type doors. The top-hinged door (shown) can be used when there's insufficient room of sides of door. The conventional side-hinged door has rugged hinges and positive seal too.

**CHECK THESE FEATURES**

Heavy Aluminum Sheets on Both Sides  
of Thick Vapor Proofed Insulation.

Rugged Steel Frame.

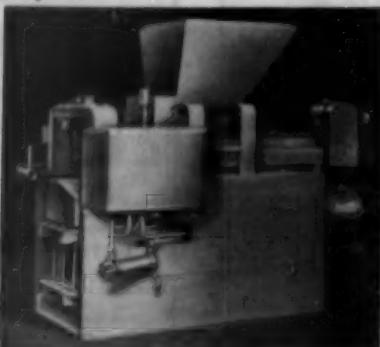


*Get the Best - Send for Details Now*  
**STANDARD DRY KILN COMPANY**

798 S. HARDING ST. INDIANAPOLIS 21, IND.

## HYDRO-KORPAK

*The Superfine Block Machine*



At last comes a block machine of streamlined compactness, where high production is obtained by low labor costs, and where initial investment is in line with modest budgets. In design, operating efficiency, capacity range and price, the Hydro-Korpack is aimed to bring the production economics of advanced engineering within reach of average sized plants with normal sales potentials.

The Hydro-Korpack is marked by such outstanding features as 1-man operation . . . hydraulic movements . . . electrical controls . . . and the exclusive compacting principle of pre-densifying by core oscillation which gives a combination of vertical and lateral packing. Rugged but compact, with 2½ tons of machine, completely self-contained, and dimensioned to occupy only 33 square feet of floor.

Available on lease-purchase or direct sale.  
Write for free descriptive literature.

**W. E. DUNN MFG. CO.** • 544 W. 24th Street, Holland, Mich.  
CANADA: Dunn Masonry Machinery, Ltd. 996 Dundas Hwy., Cooksville, Ont.  
K-1

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OF ROCK PRODUCTS**

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ON THE  
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The TRAVEL BATCHER can travel behind a truck with complete safety without Hi-way violation. On arriving at a destination, average set-up time is ten minutes.

Batch mixture is maintained uniformly with accurate scales mounted on the machine. The capacity of the TRAVEL BATCHER is 60 yards an hour delivered into mixer trucks.

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The TRAVEL BATCHER offers the performance of a stationary batch plant, plus the convenience of mobility.

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SOUTH . . . WEST**

Satisfied customers everywhere make similar statements

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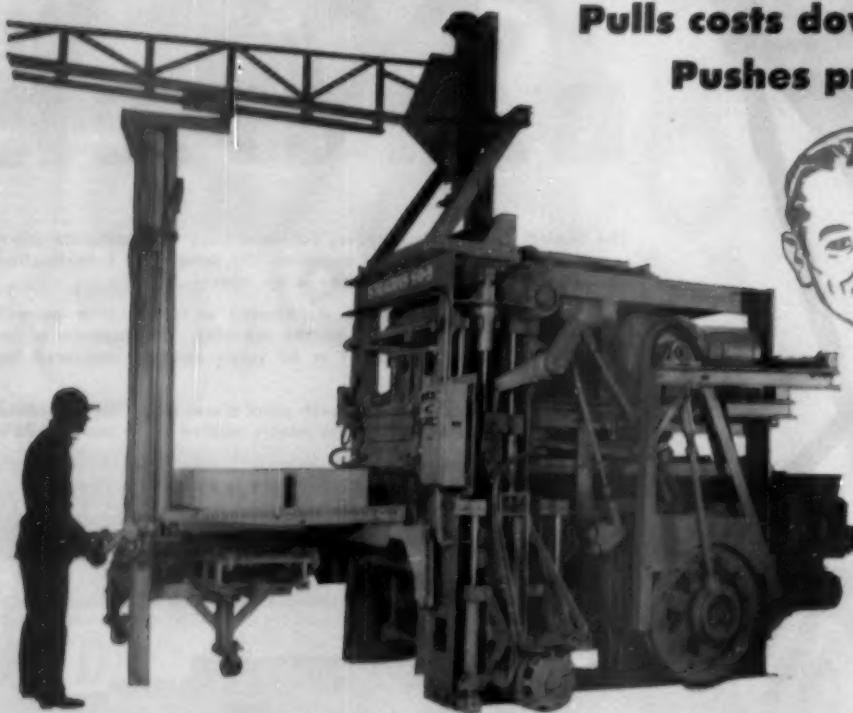
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The hopper, with a capacity of 8 yards can be recharged with either a dump truck or a front-end loader.



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EVEN-TEXTURED BLOCKS  
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# ROCK PRODUCTS

## DIRECTORY OF MANUFACTURERS' EQUIPMENT

### 1955

Machinery, equipment and supplies for the Rock Products' Industries are listed alphabetically and the names and addresses of manufacturers indicated.

Advertisers who use ROCK PRODUCTS are identified by a dot (•) preceding the listing.

Numbers under manufacturers' listing identify subdivision in which their equipment falls. See beginning of each classification for code identification.

#### A

##### ABRASIVES

- AMERICAN WHEELABRATOR & EQUIPMENT CORP., 1281 South Bryn Mawr St., Mishawaka, Indiana
- CLIPPER MFG. CO., 2800 Warwick, Kansas City 6, Mo.
- PANGBORN CORP., Hagerstown, Md.

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- EDICK LABORATORIES, 427 West National Ave., Milwaukee, Wis.
- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.
- THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio
- ORONITE CHEMICAL CO., 38 Sansome St., San Francisco, Calif.
- REARDON INDUSTRIES, INC., 2837 Stanton Ave., Cincinnati 6, Ohio
- TAMMS INDUSTRIES INC., 228 N. LaSalle St., Chicago 1, Ill.
- VAN HOVEN CO., INC., 418 Bremer Arcade, St. Paul 1, Minn.

##### AERATION UNIT, for Blending Agitation in Bins

- THE BIN-DICATOR COMPANY, 13946 Kercheval Avenue, Detroit 13, Michigan
- CONCRETE TRANSPORT MIXER CO., 4980 Fyler Ave., St. Louis 9, Mo.
- FULLER CO., 128 Bridge St., Catskill, Pa.
- MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.
- F. L. SMITH & CO., 11 W. 43rd St., New York 36, N.Y.

##### AERIAL TRAMWAYS

- SAUERMAN BROS., INC., 530 S. Clinton St., Chicago 7, Ill.
- AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 12, Ohio
- COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., 1403 Russ Bldg., San Francisco 6, Calif.

##### AFTERCoolERS, Air

- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York, N.Y.
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

##### AGGREGATES, for Concrete, Lightweight Slag, Haydite, Pumice, Perlite, Cinders, etc.

- THE CELOTEX CORP., 120 S. La Salle St., Chicago 3, Ill.
- DULUTH SLAG CO., Foot of 99th Avenue West, Duluth 7, Minn.
- GREAT LAKES CARBON CORP., Perlite Div., 612 South Flower St., Los Angeles 17, Calif.
- HARRISON-WALKER REFRactories CO., 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- R. P. MCMINDES, INC., P.O. Box 52, 619 Centre St., Ashland, Pa.
- PUMICE, INC., 1820 N. Yellowstone Ave., P.O. Box 317, Idaho Falls, Idaho
- REARDON INDUSTRIES, INC., 2837 Stanton Ave., Cincinnati 6, Ohio
- UNITED STATES STEEL CORP., 525 William Penn Place, Pittsburgh 30, Pa.
- THE WAYLITE CO., 105 W. Madison St., Chicago 2, Ill.

##### AGITATORS (see Vibrators, Portable Concrete)

##### AGITATORS, Slurry (see Slurry Agitators)

##### AIR COMPRESSORS

1. Portable
2. Stationary

- ALLIS-CHALMERS MFG. CO., 975 S. 70th St., Milwaukee 1, Wis.
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.
- 2
- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.
- 2
- FULLER CO., 128 Bridge St., Catskill, Pa.
- 2
- GARDNER-DENVER CO., Quincy, Ill.
- 2
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- 2
- THE JAEGER MACHINE CO., 530 W. Spring St., Columbus 16, Ohio
- 2
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- 2
- LE ROI COMPANY, 1706 S. 68th St., Milwaukee 14, Wis.
- SCHRAMK, INC., West Chester, Pa.

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- 2

- WORTHINGTON CORP., 80 2nd St., Plainfield, N.J.
- 2

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- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- THE READY-POWER CO., 11231 Fred Ave., Detroit 14, Mich.
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##### AIR ENTRAINING AGENTS

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- THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio

- MINERAL PIGMENTS CORP., Washington Blvd., Muirkirk, Md.
- NOPCO CHEMICAL CO., First & Essex Sts., Harrison, N.J.
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- VERISET CORP., 150 Nassau St., New York City 38, N.Y.

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- THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio

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1

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1-3

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F. A. B. MANUFACTURING CO., 1249 67th St., Oakland, Calif.

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TRUCKSTELL MFG. CO., 1437 Union Commerce Bldg., Cleveland 14, Ohio

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**B**

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• REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif.

• SINTERING MACHINE CORP., Netcong, N.J.

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2. Cloth

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1-2

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1-2

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1-2

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1

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1-2

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1

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1

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1

UNION BAG AND PAPER CORP., 233 Broadway, New York 7, N.Y.  
1

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1

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1

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1

ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.  
1

• SCHAFER POIDOMETER CO., 28th & Smallman Sts., Pittsburgh, Pa.  
1

**BALL MILLS** (see Mills, Ball)

**BALLS & SLUGS, Grinding** (see Grinding Media)

**BARGES, Sand and Gravel, etc.**

DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.

• EAGLE IRON WORKS, 127 Heilcomb Ave., Des Moines 4, Iowa

MAXON CONSTRUCTION CO., MARINE DIV., Tell City, Ind.

• YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

**BATCHERS, BIN**

1. Weighing
2. Volumetric

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio  
1-2

• BESSER MFG. COMPANY, Alpena, Mich.  
1-2

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.  
1

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
1-2

• BUTLER BIN CO., 945 Blockstone Ave., Waukesha, Wisc.  
1-2

• CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky.  
1

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
1-2

• CONCRETE EQUIPMENT MFG. CO., 5437 Tweedy, South Gate, Calif.  
1-2

• CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.  
1

THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio  
1-2

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.  
1-2

• FULLER CO., 128 Bridge St., Cortonaqua, Pa.  
2

THE HOWE SCALE CO., Rutland, Vt.  
1

THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
2

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
1

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.  
1-2

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.  
1

MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.  
1

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• SYNTRON CO., 430 Lexington Ave., Homer City, Pa. 1

• THURMAN MACHINE CO., 154-156 North Fifth St., Columbus, Ohio 1

TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill. 1-2

RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1-2

### BATCHING PLANTS

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONCRETE TRANSPORT MIXER CO., 4987 Fyler Ave., St. Louis 9, Mo.

• COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.

THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

• FANNING SCHUETT ENGINEERING CO., 4225 N. Third Street, Philadelphia 40, Pa.

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.

• MIXERMOBILE MANUFACTURERS, 6855 N.E. Holsey St., Portland, Ore.

• NOBLE CO., 1840 7th St., Oakland 20, Calif.

• SOUTH EAST READY MIX CO., 6540 Holliday Blvd., Salt Lake City, Utah

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WILLIS PORTABLE BATCH CO., 1620 Syracuse, Denver 8, Colo.

### BATTERIES, Storage

• THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio

• THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

### BATTERY CHARGING EQUIPMENT

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

GENERAL SCIENTIFIC EQUIPMENT CO., 2735 W. Huntington St., Philadelphia 32, Pa.

D. W. ONAN & SONS, INC., University Ave., S.E. at 25th, Minneapolis 14, Minn.

WESTINGHOUSE ELECTRIC CO., Gateway Bldg., Pittsburgh 30, Pa.

### BEARING METALS

• AMERICAN BRAKE SHOE COMPANY, NATIONAL BEARING DIVISION, 4920 Manchester Avenue, St. Louis 10, Missouri

• AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.

• JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.

• STOODY CO., Whittier, Calif.

### BEARINGS

1. Ball
2. Roller
3. Thrust
4. Needle

• AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y. 1-2-3

• CHAIN BELT CO., 4649 W. Greenfield Ave., Milwaukee 1, Wis. 1

• DODGE MFG. CORP., 500 S. Union St., Mishawaka, Ind. 1-2

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill. 1-2-3

• LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill. 1-2-3

• REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif. 2

• ROLLWAY BEARING CO., INC., 341 Seymour St., Syracuse 4, N.Y. 1-2-3

• SHAFER BEARING CORP., 800 Burlington Ave., Downers Grove, Ill. 2-3

• S K F INDUSTRIES, INC., Front St. & Erie Ave., Philadelphia 32, Pa. 1-2-3

• STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill. 1

• THE TIMKEN ROLLER BEARING CO., 1833 Duber Ave. S.W., Canton 6, Ohio 3

• THE TORRINGTON CO., Torrington, Conn. 1-2-3-4

• THE TORRINGTON CO., BANTAM BEARINGS DIV., 3702 W. Sample St., South Bend 21, Ind. 1-2-3

### BELT ALIGNERS

• BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.

• CHAIN BELT CO., 4649 W. Greenfield Ave., Milwaukee 1, Wis.

• CONTINENTAL GIN CO., 4300 8th Ave. S., Birmingham, Ala.

• FANNING SCHUETT ENGINEERING CO., 4323 N. Third Street, Philadelphia 40, Pa.

JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus, Ohio

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

• MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.

• UNIVERSAL ENGINEERING CORP., 625 C. Ave. N.W., Cedar Rapids, Iowa

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### BELT CONVEYORS AND ACCESSORIES (see Conveyors, Belt)

### BELT CUTTERS

• ARMSTRONG-BRAY & COMPANY, 5366 Northwest Highway, Chicago 30, Illinois

• FLEXIBLE STEEL LACING CO., 4607 Lexington St., Chicago 44, Ill.

• A dot before name indicates ROCK PRODUCTS Advertiser

### BELT FASTENERS AND LACING

• ARMSTRONG-BRAY & COMPANY, 5366 Northwest Highway, Chicago 30, Illinois

CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.

• FLEXIBLE STEEL LACING CO., 4607 Lexington St., Chicago 44, Ill.

• THREE POINT BELT LACING CO., P. O. Box 389, Peace Dale, R.I.

### BELT PULLEYS (see Pulleys, Conveyors, etc.)

### BELT TRIPPERS (see Conveyor Belt Trippers)

### BELTING Chain

• CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

THE FAHRLALOY CO., 150th & Lexington Aves., Harvey, Ill.

THE FAIRFIELD ENGINEERING CO., 334 Barnhart St., Marion, Ohio

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

### BELTING, Heat Resistant

• THE AMERICAN RUBBER MFG. CO., 1145 Park Avenue, Oakland 8, Calif.

CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.

GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.

• B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.

• QUAKER RUBBER CORP., DIV. OF H. K. PORTER CO., INC., OF PITTSBURGH, Tocony & Comly Sts., Philadelphia 24, Pa.

• RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.

### BELTING, Rubber

1. Conveyor  
2. Bucket Elevator  
3. Power Transmission

• THE AMERICAN RUBBER MFG. CO., 1145 Park Avenue, Oakland 8, Calif.

1-2-3

• BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.

1-2-3

BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Massachusetts

1-2-3

CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.

1-2-3

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

1

• DURKEE-ATWOOD CO., 215 N.E. 7th St., Minneapolis 13, Minn.

3

FIRESTONE TIRE & RUBBER CO., Akron, Ohio

1

• GATES RUBBER CO., 999 South Broadway, Denver 17, Colo.

1

GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.

1-2-3

• B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio

1-2-3

• THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio

1-2-3

E. D. HECHT & SONS, 1301 N. Hollywood St., Memphis 8, Tenn.

1-2-3

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.

1-2-3

E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Philadelphia 33, Pa.

3

REPUBLIC RUBBER DIV., LEE RUBBER & TIRE CORP., Albert Street, Youngstown 1, Ohio

1-2-3

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

1-2

• PIONEER RUBBER MILLS, 353 Sacramento St., San Francisco 11, Calif.

1-2-3

• QUAKER RUBBER CORP., DIV. OF H. K. PORTER CO., INC., OF PITTSBURGH, Tocony & Comly Sts., Philadelphia 24, Pa.

1-2-3

• RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.

1-2-3

• THERMOID CO., Trenton, N.J.

1-2-3

UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

1-2-3

### BELTING, V-Type

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

THE AMERICAN PULLEY CO., 4200 Wissahickon Ave., Philadelphia 29, Pa.

BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Massachusetts

CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.

1-2-3

DODGE MFG. CORP., 500 S. Union St., Mishawaka, Ind.

1-2-3

DURKEE-ATWOOD CO., 215 N.E. 7th St., Minneapolis 13, Minn.

• FLEXIBLE STEEL LACING CO., 4607 Lexington St., Chicago 44, Ill.

• B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio

1-2-3

THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio

1-2-3

REPUBLIC RUBBER DIV., Lee Rubber & Tire Corp., Albert St., Youngstown 1, Ohio

1-2-3

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

1-2-3

MANHEIM MFG. & BELTING CO., 654 Manbel St., Manheim, Pa.

• QUAKER RUBBER CORP., DIV. OF H. K. PORTER CO., INC., OF PITTSBURGH, Tocony & Comly Sts., Philadelphia 24, Pa.

• RAYBESTOS DIV., RAYBESTOS-MANHATTAN, INC., 75 E. Main St., Stratford, Conn.

• RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.

REPUBLIC RUBBER DIV., Lee Rubber & Tire Corp., Albert St., Youngstown 1, Ohio

1-2-3

• THERMOID CO., Trenton, N.J.

UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

1-2-3

### BELTING, Wire

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

• QUINN WIRE & IRON WORKS, Boone, Iowa

### BENDING ROLLS, Reinforcing Steel

HOUSTON CONCRETE PIPE CO., 6600 Washington Ave., P.O. Box 7767, Houston 7, Texas

KLINGELHOFER MACHINE TOOL CO., 103 Lafayette St., Kenilworth, N.J.

• QUINN WIRE & IRON WORKS, Boone, Iowa

## DIRECTORY

### BIN AERATORS, Pneumatic

- THE BIN-DICATOR COMPANY, 13946 Kirschau Avenue, Detroit 13, Michigan
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4983 Flyer Ave., St. Louis 9, Mo.
- FULLER CO., 128 Bridge St., Catonsville, Pa.
- C. S. JOHNSON CO., P.O. Box 71, Champaign, Ill.
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.
- ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.

### BIN GATES

- BEAUMONT BIRCH CO., 1900 Race St., Philadelphia 2, Pa.
- BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third St., Philadelphia 40, Pa.
- FULLER CO., 128 Bridge St., Catonsville, Pa.
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 925 N. Fourth St., Columbus 16, Ohio
- C. S. JOHNSON CO., P.O. Box 71, Champaign, Ill.
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.
- MC LANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa.
- THE NEFF & FRY COMPANY, 278 Elm St., Camden, Ohio
- PIONEER ENGINEERING WORKS, INC., 1815 Central Ave. N.E., Minneapolis 13, Minn.
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.
- SMITH ENGINEERING WORKS, 332 East Capitol Dr., Milwaukee 12, Wis.
- THE STANDARD METAL MFG. CO., 110 Center St., Maitland, Ohio
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- STRAUSS MFG. CO., INC., 307 Chestnut St., Oakland 20, Calif.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### BIN LEVEL INDICATORS

- THE BIN-DICATOR COMPANY, 13946 Kirschau Avenue, Detroit 13, Michigan
- BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FULLER CO., 128 Bridge St., Catonsville, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 925 N. Fourth St., Columbus 16, Ohio
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa.

### BINS AND BATCHING EQUIPMENT

- BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- THE BRAUNFORD COMPANY, 145 Chestnut Street, New Haven, Conn.
- L. SUMMESTER CO., 4335 W. Mitchell St., Milwaukee 14, Wis.
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- CONTINENTAL GIN CO., 4500 5th Ave. South, Birmingham, Ala.
- EAGLE CRUSHER CO., Gallon, Ohio
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- LIPPERT BIN CO., 2983 Beulah Road, Columbus, Ohio
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- THE NEFF & FRY COMPANY, 278 Elm St., Camden, Ohio
- NOBLE CO., 1860-7th St., Oakland 20, Calif.
- SOUTH EAST READY MIX CO., 6400 South Holliday Blvd., Salt Lake City, Utah
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.

\* A dot before name indicates ROCK PRODUCTS Advertiser

- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### BINS, STORAGE: CONCRETE (MONOLITHIC)

- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

### BIN, STORAGE: CONCRETE (PRECAST)

- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- THE DODSON MFG. CO., INC., 1463 Burwiss Ave., Wichita 2, Kan.
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- NEFF & FRY CO., 280 Elm St., Camden, Ohio
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### BINS, STORAGE: STEEL

- BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio
- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.
- BETHLEHEM STEEL CO., Third Street, Bethlehem, Pa.
- BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.
- CONTINENTAL GIN CO., 4500 5th Ave. South, Birmingham, Ala.
- EAGLE CRUSHER CO., INC., Gallon, Ohio
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- LIPPERT BIN CO., 2983 Beulah Road, Columbus, Ohio
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- THE NEFF & FRY COMPANY, 278 Elm St., Camden, Ohio
- NOBLE CO., 1860-7th St., Oakland 20, Calif.
- SOUTH EAST READY MIX CO., 6400 South Holliday Blvd., Salt Lake City, Utah
- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.

- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

- THE KIRK & BLUM MFG. CO., 3120 Foster St., Cincinnati 9, Ohio

- E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.

- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.

- PIONEER ENGINEERING WORKS, INC., 1815 Central Ave. N.E., Minneapolis 13, Minn.

- RICHARDSON SCALE CO., 668-698 Van Houten Ave., Clifton, N.J.

- SMITH ENGINEERING WORKS, 332 E. Capitol Dr., Milwaukee 12, Wis.

- SPROUT WALDRON & CO., INC., Munsey, Pa.

- THE STANDARD METAL MFG. CO., 110 Center St., Maitland, Ohio

- TRACTOR & EQUIPMENT CO., 10000 S. Ridgeland Ave., Oak Lawn, Ill.

- UNIVERSAL ENGINEERING CORP., 625 C. Ave., N.W., Cedar Rapids, Iowa

- UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 812 Montgomery St., St. Louis 6, Mo.

### BITS, Carbide Drill

- BRUNNER & LAY, INC., 9200 King Street, Franklin Park, Ill.

- GARDNER-DENVER CO., Quincy, Ill.

- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

- E. J. LONGYEAR CO., 1700 Foehay Tower, Minneapolis 2, Minn.

- LOOMIS MACHINE CO., Tiffin, Ohio

- THE SALEM TOOL CO., 767 S. Ellsworth Ave., Salem, Ohio

- THROWAWAY BIT CORP., 4200 N.W. Yeon Ave., Portland 10, Ore.

### BITS, Diamond

- PENNSYLVANIA DRILLING CO., 1201 Chartiers Ave., Pittsburgh 20, Pa.

### BITS, Diamond Drilling

- SPRAGUE & HENWOOD, INC., 221 W. Olive St., Scranton 2, Pa.

### BITS, Drill

- BRUNNER & LAY, INC., 9200 King Street, Franklin Park, Ill.

- BUCYRUS-ERIE CO., South Milwaukee, Wis.

- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.

- GARDNER-DENVER CO., Quincy, Ill.

- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

- E. J. LONGYEAR CO., 1700 Foehay Tower, Minneapolis 2, Minn.

- SANDERSON CYCLONE DRILL CO., 157 S. Main St., Orrville, Ohio

- SCHRAMM, INC., West Chester, Pa.

- SPANG & COMPANY, Butler, Pa.

- THROWAWAY BIT CORP., 4200 N.W. Yeon Ave., Portland 10, Ore.

### BITS, Drill, Detachable

- BRUNNER & LAY, INC., 9200 King Street, Franklin Park, Ill.

- GARDNER-DENVER CO., Quincy, Ill.

## DIRECTORY

- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- LOOMIS MACHINE CO., Tiffin, Ohio
- SCHRAMM, INC., West Chester, Pa.
- THROWAWAY BIT CORP., 4200 N.W. Yeon Ave., Portland 10, Ore.

### BITS, Drill, Grinders

- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

### BLACKSMITH TOOLS

- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

### BLASTING MACHINES

- AMERICAN CYANAMID CO., Explosives Department, 30 Rockefeller Plaza, New York 20, N.Y.
- ATLAS POWDER COMPANY, Wilmington 9, Delaware
- E. I. DU PONT DE NEMOURS & CO., INC., 11302 Nemours Building, Wilmington 98, Del.
- HERCULES POWDER CO., 946 King St., Wilmington 99, Del.
- ILLINOIS POWDER MFG. CO., 306 Olive St., St. Louis 16, Mo.
- THE KING POWDER CO., INC., P.O. Box 974, Cincinnati 1, Ohio
- TROJAN POWDER CO., 17-N 7th St., Allentown, Pa.

### BLASTING SUPPLIES

- AMERICAN CYANAMID CO., Explosives Department, 30 Rockefeller Plaza, New York 20, N.Y.
- ATLAS POWDER COMPANY, Wilmington 99, Delaware
- E. I. DU PONT DE NEMOURS & CO., INC., 11302 Nemours Bldg., Wilmington 98, Del.
- THE ENSIGN-BICKFORD COMPANY, Simsbury, Conn.
- HERCULES POWDER CO., 946 King St., Wilmington 99, Del.
- ILLINOIS POWDER MFG. CO., 306 Olive St., St. Louis 16, Mo.
- THE KING POWDER CO., INC., P.O. Box 974, Cincinnati 1, Ohio
- TROJAN POWDER CO., 17-N 7th St., Allentown, Pa.
- VICTOR EQUIPMENT CO., 844 Polson St., San Francisco 7, Calif.

### BLOCK MACHINES, Concrete Building

- 1. Tamping
- 2. Vibrating
- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio  
1-2
- J. W. APPLEY & SON, INC., 831 9th St. North, St. Petersburg 2, Fla.  
2
- BERGEN MACHINE & TOOL CO., INC., 189 Franklin Avenue, Nutley 10, New Jersey
- BESSER MFG. CO., Alpena, Mich.  
1-2
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
1-2
- CONCRETE EQUIPMENT CO., 544 Ottawa Ave., Holland, Mich.  
1-2
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- LITH-I-BAR CO., Holland, Mich.  
M & M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.
- MULTIPLEX MACHINERY CO., DIV. OF MULTIFAC, INC., Fremont St., Elmore, Ohio
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.
- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.

### BLOCKS, Pillow, Ball and Roller Bearing

- J. W. APPLEY & SON, INC., 831 9th Street North, St. Petersburg 2, Florida
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 34, Calif.
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- DODGE MFG. CORP., 50 S. Union St., Mishawaka, Ind.
- HEWITT-ROBBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- THE JEFFREY MFG. CO., 925 N. Fourth St., Columbus 16, Ohio

\* A dot before name indicates ROCK PRODUCTS Advertiser

- CONCRETE PRODUCTS MACHINERY INC., Suite 204, 1930 Wilshire Blvd., Los Angeles, Calif.  
3
- DES PLAINES CONCRETE PROD. MACHINERY, 930 North Ave., Des Plaines, Ill.  
1-2
- W. E. DUNN MANUFACTURING CO., 413 West 33rd St., Holland, Mich.  
1
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.  
1-2
- GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N.J.  
2
- F. C. GEORGE MACHINE CO., INC., 100 S. Westmoreland Drive, Orlando, Fla.  
1-2
- HYDROBLOC, INC., 269 West 11th St., Holland, Mich.  
1-2
- KENT MACHINE CO., Cuyahoga Falls, Ohio  
1
- LITH-I-BAR CO., Holland, Mich.  
2
- MULTIPLEX MACHINERY CO., DIV. OF MULTIFAC, INC., Fremont St., Elmore, Ohio  
1-2
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.  
1-2
- PRASCHAK MACHINE CO., Marshfield, Wis.  
2
- STEARNS MFG. CO., INC., 600 E. Beecher, Adrian, Mich.  
2
- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.  
1-2
- WITTEMANN MACHINERY CO., Farmington, N.J.  
1-2

### BLOCK MACHINES ACCESSORIES

- BERGEN MACHINE & TOOL CO., INC., 189 Franklin Avenue, Nutley 10, New Jersey
- BESSER MFG. CO., Alpena, Mich.
- THE BRANFORD COMPANY, 145 Chestnut Street, New Haven, Conn.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE EQUIPMENT CO., 544 Ottawa Ave., Holland, Mich.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- LITH-I-BAR CO., Holland, Mich.  
M & M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.
- MULTIPLEX MACHINERY CO., DIV. OF MULTIFAC, INC., Fremont St., Elmore, Ohio
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.
- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.

- W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- S E P INDUSTRIES, INC., Front St. & Erie Ave., Philadelphia 33, Pa.
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### BLOCKS, REFRactory, (see Refractories)

### BLOCKS, Sheave and Chain

- AMERICAN HOIST AND DERRICK COMPANY, 63 South Robert St., St. Paul 1, Minnesota
- MADESCO TACKLE BLOCK CO., P. O. Box 148, Easton, Pa.
- SAUERMAN BROS. INC., 300 S. Clinton St., Chicago 7, Ill.

### BLOCK SPLITTERS

- J. W. APPLEY & SON, INC., 831 9th Street North, St. Petersburg 2, Florida
- BESSER MANUFACTURING COMPANY, Alpena, Mich.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- DES PLAINES CONCRETE PROD. MACHINERY, 930 North Ave., Des Plaines, Ill.
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.
- LITH-I-BAR CO., Holland, Mich.
- GENE OLSEN CORP., 401 Grace St., Adrian, Mich.
- TRUAX MACHINE CO., 16 Michigan Ave., Seattle, Wash.

### BLOWERS (see Fans and Blowers)

### BLOW TORCHES, Heaters, Thawing Outfits for Frozen Aggregates

- HAUCK MANUFACTURING COMPANY, 124-136 Tenth Street, Brooklyn 15, New York
- LITTLEFORD BROS., INC., 453 E. Pearl St., Cincinnati 2, Ohio

### BOATS, Derricks, Tow

- DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.

### MAXON CONSTRUCTION CO., MARINE DIVISION, Tell City, Ind.

### BOATS, Self-Unloading

- HEWITT-ROBBINS INC., 666 Glenbrook Road, Stamford, Conn.

### MANITOWOC SHIPBUILDING, INC., 16th & River Sts., Manitowoc, Wis.

### BODIES, Ready Mixed Concrete

- 1. Transit Mixed  
2. Non-Agitator
- BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.  
1-2
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.  
1
- CONCRETE EQUIPMENT MFG. CO., 5437 Tweedy Blvd., South Gate, Calif.  
1
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.  
1

- CONSERCO CO., River Road & B&O RR, Washington 16, D.C.  
1

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.  
1

- HERCULES STEEL PROD. CORP., Sherman Street, Galion, Ohio  
1

- IMPERIAL CONSTRUCTION EQUIPMENT CO., 3400 Lake St., Melrose Park, Ill.  
1

- THE JAEGER MACHINE CO., 380 W. Spring St., Columbus 16, Ohio  
1

- LEROI CO., 1706 S. 68th St., Milwaukee 14, Wisc.  
1

- MAXON CONSTRUCTION CO., INC., MFG. DIV., 151 N. Ludlow St., Dayton 2, Ohio  
2

- THE T. L. SMITH CO., 2835 N. 32nd St., Milwaukee 16, Wis.  
1

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.  
1-2

- WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.  
1-2

- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.  
1-2

### BODIES, Detachable Concrete Truck

- SCHONROCK EQUIPMENT MFG. CO., Mathis Field, P. O. Box 1843 San Angelo, Texas

- WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.

### BODIES, Dump, Dump Truck

- COVERTO MANUFACTURING CO., Cambridge City, Ind.

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.  
1

- EASTON CAR & CONSTRUCTION CO., Easton, Pa.

- THE GALION ALLSTEEL BODY CO., 605 S. Market St., Galion, Ohio

- GAR WOOD IND., INC., Wayne Division, Wayne, Mich.

- THE HEIL COMPANY, 3000 W. Montana St., Milwaukee 1, Wis.

- HERCULES STEEL PROD. CORP., Sherman Street, Galion, Ohio

- KOEHRING CO., 3026 W. Concordia Ave., Milwaukee 16, Wis.

- THE MARION METAL PROD. CO., Cheney Avenue, Marion, Ohio

- NATIONAL LIFT CO., 800 Lowell St., Ypsilanti, Mich.

- ST. PAUL HYDRAULIC HOIST, 2207 University Ave., Minneapolis 14, Minn.

### BODIES, Trailer

- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.  
1

- EASTON CAR & CONSTRUCTION CO., Easton, Pa.

- THE FEUHAUF TRAILER CO., 10940 Harper Ave., Detroit 32, Mich.

- THE GALION ALLSTEEL BODY CO., 605 S. Market Street, Galion, Ohio

- GAR WOOD IND., INC., Wayne Division, Wayne, Mich.

- LANDIS STEEL CO., 116 West A St., P.O. Box 248, Picher, Okla.

- SCHONROCK EQUIPMENT MFG. CO., Mathis Field, P.O. Box 1843, San Angelo, Texas

## DIRECTORY

**ST. PAUL HYDRAULIC HOIST,**  
2207 University Ave., Minneapolis  
14, Minn.  
**WINCH-LIFT, INC.**, 303 First Na-  
tional Bank Bldg., Shreveport, La.

### BODIES, Trailer, Bulk Cement

- **BAUGHMAN MFG. CO., INC.**, Sherman Road, Jerseyville, Ill.
- **CIMCO INDUSTRIES, INC.**, Galloway, Ohio
- **COOK BROS. EQUIPMENT CO.**, 3324 Bon Fernande Road, Los Angeles 65, Calif.
- **THE FRUEHAUF TRAILER CO.**, 10940 Harper Ave., Detroit 32, Mich.
- **HERCULES STEEL PROD. CORP.**, Sherman St., Galloway, Ohio
- **HIGHWAY EQUIPMENT CO., INC.**, 623 D Ave. NW., Cedar Rapids, Iowa
- **LANDIS STEEL CO.**, 116 West A St., P.O. Box 248, Picher, Okla.
- **SCHONROCK EQUIPMENT MFG. CO.**, Mathis Field, P.O. Box 1543, San Angelo, Texas
- **WINCH-LIFT, INC.**, 303 First National Bank Bldg., Shreveport, La.

### BODIES, Truck, Concrete Block Self-unloading

- **WM. BROS. BOILER & MFG. CO.**, 1057 10th Ave. S.E., Minneapolis 14, Minn.
- **BUILDERS EQUIPMENT COMPANY**, 4012 N. Central Avenue, Phoenix, Arizona
- **DUMPTER BROS. INC.**, Springfield Ave., Knoxville 17, Tenn.
- **NATIONAL LIFT CO.**, 800 Lowell St., Ypsilanti, Mich.
- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.
- **WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynnwood, Calif.

### BOILER ACCESSORIES

**BURKHART ENGINEERING ASSO-**  
CIATES, 30 Huntington Avenue,  
Boston, Mass.

### BOILER FEED WATER SYSTEMS

• **BAILEY METER CO.**, 1030 Ivanhoe Rd., Cleveland 16, Ohio

### BOILER INSULATION

**JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.

### BOILER TUBES

- **PLURICO CO.**, 1800 N. Kingsbury St., Chicago 14, Illinois
- **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.
- **WM. BROS. BOILER & MFG. CO.**, 1057 10th Ave. S.E., Minneapolis 14, Minn.

### BOILERS

- **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.
- **WM. BROS. BOILER & MFG. CO.**, 1057 10th Ave. S.E., Minneapolis 14, Minn.
- **BURKHART ENGINEERING ASSO-**  
CIATES, 30 Huntington Avenue,  
Boston, Mass.
- **CLEAVER-BROOKS CO.**, 326 E. Keefe Ave., Milwaukee 12, Wis.
- **KENNEDY-VAN SAUN MFG. &**  
ENG. CORP., 2 Park Ave., New York 16, N.Y.
- **SHORE ENGINEERING**, 322 Broad-  
way, New York 7, N.Y.
- **STORM, INC.**, 845-92nd Ave., Oakland 3, Calif.

### BOILERS, Waste Heat

- **THE BABCOCK & WILCOX CO.**, 161 W. 42nd St., New York 17, N.Y.
- **CLEAVER-BROOKS CO.**, 326 E. Keefe Ave., Milwaukee 12, Wis.
- **KENNEDY-VAN SAUN MFG. &**  
ENG. CORP., 2 Park Ave., New York 16, N.Y.

### BOOSTERS, Voltage, Motor Generator

- **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 3, N.Y.
- **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

### Brake Lining

- **AMERICAN BRAKE SHOE CO.**, 220 Park Ave., New York 17, N.Y.
- **JOHNS-MANVILLE**, 22 E. 40th St., New York 16, N.Y.
- **RAYBESTOS-MANHATTAN, INC.**, MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.
- **RAYBESTOS DIV.**, RAYBESTOS-MANHATTAN, INC., 75 E. Main St., Stratford, Conn.
- **THERMOID CO.**, Trenton, N.J.

### Brakes

- 1. Clutch
- 2. Hydraulic
- 3. Magnetic
- **DYNAMIC CORP.**, 3307 14th Ave., Kenosha, Wis.
- **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 3, N.Y.
- **THE GOODYEAR TIRE & RUBBER CO., INC.**, 1144 E. Market St., Akron 16, Ohio
- 3—
- **STEARNS MAGNETIC INC.**, 675 S. 38th St., Milwaukee 46, Wis.
- 3—
- **TIMKIN DETROIT & AXLE DIV.**, ROCKWELL SPRING & AXLE CO., 100 Clark Ave., Detroit, Mich.
- 1—3—

### BRICK, Refractory, Fire (see Refractories)

### BRICK MACHINES AND MOLDS

- 1. Concrete
- 2. Sand-Lime
- **J. W. APPLEY & SON, INC.**, 831 9th St. North, St. Petersburg 2, Fla.
- 1—
- **BEISER MFG. CO.**, Alpena, Mich.
- 1—
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- 1—
- **CONCRETE MACHINERY CO.**, P.O. Drawer 60, Hickory, No. Car.
- 1—
- **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuban Mt.
- 1—
- **JACKSON & CHURCH CO.**, 321 N. Hamilton St., Saginaw, Mich.
- 2—
- **MULTIPLEX MACHINERY CO.**, DIV. OF MULTIPACK INC., Fremont St., Elmore, Ohio
- 1—3—
- **THE GENE OLSEM CORP.**, 401 Grace St., Adrian, Mich.
- 1—
- **W. A. RIDDELL CORP.**, Bucyrus, Ohio
- 1—

### BUCKET LOADERS

- **AMERICAN BRAKE SHOE COM-**  
PANY, 230 Park Avenue, New York 17, New York
- **J. W. APPLEY & SON, INC.**, 831-9th St. N., St. Petersburg 7, Fla.

\* A dot before name indicates ROCK PRODUCTS Advertiser

• **BARBER-GREENE CO.**, 400 N. Highland Ave., Aurora, Ill.

• **BAUGHMAN MFG. CO., INC.**, Sherman Road, Jerseyville, Ill.

• **BUTLER BIN CO.**, 945 Blockstone Avenue, Waukesha, Wis.

• **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.

• **EAGLE CRUSHER CO., INC.**, 900 Harding Way East, Galloway, Ohio

• **KENNEDY-VAN SAUN MFG. &**  
ENG. CORP., 2 Park Ave., New York 16, N.Y.

• **H. P. NELSON IRON WORKS, INC.**, 820 Bloomfield Ave., Clifton, N.J.

• **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.

### BUCKET LIPS & TEETH

• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.

• **AMERICAN MANGANESE STEEL DIV.**, AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

• **BLAW-KNOX CO.**, Blawnox, Pittsburgh, Pa.

• **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 23rd Ave., Portland 10, Ore.

• **THE FROG, SWITCH & MFG. CO.**, Carlisle, Pa.

• **GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio

• **H & L TOOTH CO.**, 1540 South Greenwood Ave., Montebello, Calif.

• **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.

• **MARION POWER SHOVEL CO.**, 617 W. Center St., Marion, Ohio

• **THE OWEN BUCKET CO.**, 6001 Breakwater Ave., Cleveland 2, Ohio

• **PAGE ENGR. CO.**, Clearing Post Office, Chicago 38, Ill.

• **SAUERMAN BROS. INC.**, 530 S. Clinton St., Chicago 7, Ill.

• **TAYLOR-WHARANT IRON & STEEL CO.**, High Bridge, N.J.

### BUCKETS

- 1. Clamshell & Orange Peel
- 2. Dragline & Slackline
- 3. Dredge & Excavator
- 4. Elevator
- 5. Grapple
- 6. Skip
- 7. Trommel
- 8. Tractor Loader

• **AMERICAN BRAKE SHOE CO.**, 230 Park Ave., New York 17, N.Y.

—2—3—

• **AMERICAN MANGANESE STEEL DIV.**, AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

—3—4—7

• **J. W. APPLEY & SON, INC.**, 831 9th St. North, St. Petersburg 2, Fla.

—6—

• **BAUGHMAN MFG. CO., INC.**, Sherman Road, Jerseyville, Ill.

—4—

• **BEAUMONT BIRCH CO.**, 1805 Race St., Philadelphia 2, Pa.

—3—6—

• **BERGEN MACHINE & TOOL CO., INC.**, 139 Franklin Avenue, Nutley 10, New Jersey

—6—

• **BLAW-KNOX CO.**, Blawnox, Pittsburgh, Pa.

—1—

• **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

—4—

• **BUCYRUS-ERIE CO.**, South Milwaukee, Wis.

—1—2—3—5

• **CHAIN BELT COMPANY**, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

—4—

• **CONTINENTAL GIN CO.**, 4500 5th Ave. S., Birmingham, Ala.

—4—

• **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.

—4—

• **DROTT MFG. CORP.**, 3841 W. Wisconsin Ave., Milwaukee 8, Wis.

—8—

• **ELECTRIC STEEL FOUNDRY CO.**, 2141 N.W. 23rd Ave., Portland 10, Ore.

—1—2—5—

• **THE FAIRFIELD ENGINEERING CO.**, 324 Barnhart St., Marion, Ohio

—4—

• **THE FROG, SWITCH & MFG. CO.**, Carlisle, Pa.

—1—2—3—4—5—6—7—8

• **EASTON CAR & CONSTRUCTION CO.**, Euston, Pa.

—6—

• **GEO. HAASS MFG. CO., INC.**, Div. Pettibone Mulliken Corp., 350 Fifth Ave., New York 1, N.Y.

—1—8—8

• **HAYWARD CO.**, 50 Church St., New York 7, N.Y.

—1—

• **HENDRICK MFG. CO.**, 39 Dundaff St., Carbondale, Pa.

—4—

• **HENDRIX MFG. CO.**, Mansfield, La.

—1—

• **H & L TOOTH CO.**, 1540 S. Greenwood Ave., Montebello, Calif.

—1—2—3—5—6—8

• **INSLEY MFG. CORP.**, 801 N. Olney St., Indianapolis 6, Ind.

—2—

• **IOWA MFG. CO.**, 916-16th St. N.E., Cedar Rapids, Iowa

—8—

• **THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio

—4—6

• **C. S. JOHNSON CO.**, P. O. Box 71, Champaign, Ill.

—1—4—

• **JOS. F. KIESLER CO.**, 938 W. Huron St., Chicago 22, Ill.

—1—3—

• **LESSMANN MFG. CO.**, E. 20 and Foster Blvd., Des Moines 4, Iowa

—8—

• **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.

—4—6

• **MATERIAL HANDLING INC.**, 4985 Flyer Ave., St. Louis 9, Mo.

—4—6

• **MECKUM ENGINEERING, INC.**, Dayton Road, Ottawa, Ill.

—4—

• **THE OWEN BUCKET CO.**, 6001 Breakwater Ave., Cleveland 2, Ohio

—3—5

• **PAGE ENGR. CO.**, Clearing Post Office, Chicago 38, Ill.

—3—

• **PEKAY MACHINED ENGINEERING CO.**, 865 Sangamon St., Chicago, Ill.

—4—

• **PETTIBONE MULLIKEN CORP.**, 4700 W. Division St., Chicago 51, Ill.

—1—3—

• **PRASCHAK MACHINE CO.**, Marshfield, Wis.

—4—

• **"QUICK-WAY" TRUCK SHOVEL CO.**, 4150 Josephine St., Denver, Colo.

—1—2—3—5

• **SAUERMAN BROS. INC.**, 530 S. Clinton St., Chicago 7, Ill.

—2—

• **SCHIEBEL-SANTAM CO.**, Park St., Waverly, Iowa

—1—2—3—8

• **SMITH ENGINEERING WORKS**, 332 E. Capitol Dr., Milwaukee 12, Wis.

—4—

• **THE STANDARD METAL MFG. CO.**, 110 Center St., Moline, Ohio

—4—

## DIRECTORY

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.  
3-4

• UNIVERSAL ENGINEERING CORP., 625 C. Ave., N.W. Cedar Rapids, Iowa  
4

• UNIVERSAL ROAD MACHINERY CO., 27 Emery St., Kingston, N.Y.  
4

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.  
1-2-3-4-5-6-7-8

• WEBSTER MFG. CO., West Hall St., Tiffin, Ohio  
4-6

• WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio  
1-2-5

YAUN MFG. CO., INC., 2130 N. 3rd St., Baton Rouge, La.  
1-2

• YUBA MFG. CO., 351 California St., San Francisco 4, Calif.  
1

### BULK CEMENT HANDLING EQUIPMENT

• BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.

• BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

BEAUMONT BIRCH COMPANY, 1503 Race Street, Philadelphia 2, Penn.

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

• CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky.

CEMCO INDUSTRIES, INC., Galion, Ohio

• CHAIN BELT COMPANY, 449 W. Greenfield Ave., Milwaukee 1, Wis.

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

THE FAIRFIELD ENGINEERING CO., 324 Bornhart St., Marion, Ohio

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

• FULLER CO., 128 Bridge St., Catskill, Pa.

• GRAMM TRAILER CORP., First Lime Bldg., Lime, Ohio

• THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.

JEFFREY MANUFACTURING CO., 925 North 4th St., Columbus 16, Ohio

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

LANDIS STEEL CO., 116 West A St., P.O. Box 248, Fisher, Okla.

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

• NOBLE CO., 1860-7th St., Oakland 20, Calif.

• RICHARDSON SCALE CO., 668-698 Van Heuton Ave., Clifton, N.J.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### BULK CEMENT STORAGE PLANTS

• BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Illinois

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

• ERIE-SPRAYER CO., Erie, Pa.

THE FAIRFIELD ENGINEERING CO., 324 Bornhart St., Marion, Ohio

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

• NEFF & FREY CO., Camden, Ohio

THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

• NOBLE CO., 1860-7th St., Oakland 20, Calif.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### BULLDOZERS, Land Clearing Equipment

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

• CATERPILLAR TRACTOR CO., Peoria 8, Ill.

DROTT MFG. CORP., 3841 W. Wisconsin Ave., Milwaukee 8, Wis.

GAR WOOD INDUSTRIES, INC., Findlay, Ohio

• THE HEIL COMPANY, 3000 W. Montana St., Milwaukee 1, Wis.

• THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

• LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.

• THE OLIVER CORP., 400 W. Madison St., Chicago 6, Ill.

• PRECO INC., 6300 E. 110th St., Los Angeles, Calif.

WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

### BURNERS, Kiln

COEN CO., 40 Boardman Place, San Francisco, Calif.

HAUCK MANUFACTURING COMPANY, 124-136 Tenth St., Brooklyn 15, New York

JOHNSTON MFG. CO., 2825 E. Hennepin Ave., Minneapolis 13, Minn.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

### BURNERS, OIL (see Oil Burners)

## C

### CABLE, Electric

• ANACONDA WIRE & CABLE CO., 23 Broadway, New York 4, N.Y.

GENERAL CABLE CORP., Ex. Offices, 420 Lexington Ave., New York City 17, N.Y.

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

• A dot before name indicates ROCK PRODUCTS Advertiser

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

• JOHN A. ROEBLING'S SONS CORP., 640 S. Broad St., Trenton 2, N.J.

SIMPLEX WIRE & CABLE CO., 79 Sidney St., Cambridge 39, Mass.

• UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

• AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 13, Ohio

### CABLE, ELECTRIC, ACCESSORIES, Connectors, etc.

ANACONDA WIRE & CABLE CO., 23 Broadway, New York 4, N.Y.

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

### CABLE EXCAVATORS

GAR WOOD INDUSTRIES, INC., Findlay, Ohio

• HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wis.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

• KOEHRING CO., 3026 W. Concordia Ave., Milwaukee 16, Wis.

• LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.

• SAUERMAN BROS. INC., 530 S. Clinton St., Chicago 7, Ill.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

### CABLEWAYS

• SAUERMAN BROS. INC., 530 S. Clinton St., Chicago 7, Ill.

• AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 13, Ohio

• COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., 1403 Russ Bldg., San Francisco 6, Calif.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

WOOD DALE MACHINE & MFG. CO., Commercial Ave., Wood Dale, Ill.

### CALCIUM CHLORIDE

• SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 Broadway, New York 6, N.Y.

A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

TAMMS INDUSTRIES, INC., 228 N. LaSalle St., Chicago 1, Ill.

### CAPACITATORS, Electric

• GENERAL ELECTRIC CO., 1 River Rd., Schenectady 5, N.Y.

WESTINGHOUSE ELECTRIC CO., Gateway Bldg., Pittsburgh 30, Pa.

### CAPSTANS & WINCHES

• CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

GAR WOOD IND. INC., Wayne Div., Wayne, Mich.

HYSTER CO., 2918 N.E. Clackamas St., Portland 8, Ore.

JEFFREY MANUFACTURING CO., 925 North 4th St., Columbus 16, Ohio.

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

PAGE ENGE. CO., Clearing Post Office, Chicago 38, Ill.

STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

TULSA WINCH DIV., Vickers, Inc., 815 E. First St., Tulsa 3, Okla.

### CAR COUPLINGS, WHEELS & LINERS

• AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.

• AMERICAN MANGANESE STEEL DIV. OF AMERICAN BRAKE SHOE CO., 309 E. 14th St., Chicago Heights, Ill.

### CAR DUMPERS

DIFFERENTIAL STEEL CAR CO., Findlay, Ohio

ROGERS IRON WORKS CO., Joplin, Mo.

• LINK BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio

### CAR LOADERS (see Loaders, Car)

### CAR MOVERS, Pullers

AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

• ARMSTRONG-BRAY & CO., 5364-76 Northwest Highway, Chicago 39, Ill.

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.

THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

• W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Read., Chicago 24, Ill.

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

WHITING CORP., Harvey, Ill.

### CAR SHAKERS

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

• NATIONAL CONVEYOR & SUPPLY CO., 256 N. Harding Ave., Chicago 24, Ill.

• SIMPLICITY ENGINEERING CO., 213 S. Oak St., Durand, Mich.

STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

VIBRO-PLUS PRODUCTS, INC., 84-11 Queens Blvd., Woodside 77, N.Y.

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### CAR THAWERS

HAUCK MANUFACTURING COMPANY, 124-136 Tenth St., Brooklyn 15, New York

### CARS, Concrete Products

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio

• BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Penn.

• THE CHASE FOUNDRY & MFG. CO., 2300 Parsons Avenue, Columbus 7, Ohio

• EASTON CAR & CONSTRUCTION CO., Easton, Pa.

### CARS, Dump

• BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Pa.

## DIRECTORY

**DIFFERENTIAL STEEL CAR CO.**, Findlay, Ohio

- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

**CARS, Electric, Remote Control**

- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- **GENERAL ELECTRIC CO.**, 1 River Rd., Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

**CARS, Mine, Quarry, Industrial**

- **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.
- BETHLEHEM STEEL CO.**, Third St., Bethlehem, Pa.
- DIFFERENTIAL STEEL CAR CO., Findlay, Ohio
- **EASTON CAR & CONSTRUCTION CO.**, Easton, Pa.
- STRAUB MFG. CO., INC., 307 Chestnut St., Oakland 20, Calif.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

**CARS, Railroad, Retaining Doors, Strapping**

DIFFERENTIAL STEEL CAR CO., Findlay, Ohio

**CARTRIDGES, Rotary, Kilns, Slag Removal**

- CARDOX CORP., 307 N. Michigan Avenue, Chicago 1, Illinois
- REMINGTON ARMS CO., INC., 909 Barnum Ave., Bridgeport 2, Conn.

**CASTINGS, Repair Parts**

- 1. Bronze
- 2. Grey Iron
- 3. Heat Resisting Steel
- 4. Malleable
- 5. Manganese
- 6. Special Alloy
- 7. Steel

- ALLIS-CHALMERS MFG. CO., 975 So. 7th St., Milwaukee 1, Wis.
- 1-2-4
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.
- 1-2-3-4-5-6
- AMERICAN BRAKE SHOE COMPANY, NATIONAL BEARING DIVISION, 4930 Manchester Avenue, St. Louis 10, Missouri
- 1
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- 3-4-5
- BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Pa.
- 3-4-7
- BETHLEHEM STEEL COMPANY, Third Street, Bethlehem, Penn.
- 1-2-3-4-5-6-7
- BIRDSBORO STEEL FOUNDRY & MACHINE CO., Birdsboro, Pa.
- 7
- CALUMET STEEL CASTINGS CORP., 1634 Summer St., Hammond, Ind.
- 3-4-7
- CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, No. Car.
- 3-4
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- 2
- DAVENPORT BEESLER CORP., 2305 Rockingham Road, Davenport, Iowa
- 2

**CEMENT**

CEMCO INDUSTRIES, INC., Gellion, Ohio

GENERAL PORTLAND CEMENT CO., 111 West Monroe St., Chicago 3, Ill.

• HARRISON-WALKER REFRACTORY CO., 1900 Farmers Bank Bldg., Pittsburgh 22, Pa.

• DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.

DODGE STEEL CO., 4501 Tacony St., Philadelphia 33, Pa.

• EAGLE IRON WORKS, 127 Holcombe Ave., Des Moines 4, Iowa

3-4

• ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 23rd Ave., Portland 10, Ore.

5-6

THE FAHRALLOY CO., 150th & Lexington Aves., Harvey, Ill.

2-3

• THE FALK CORP., 3001 W. Canal St., Milwaukee 8, Wis.

7

• FARREL-BACON, Ansonia, Conn.

2

FARRELL-CHEEK STEEL COMPANY, Sandusky, Ohio

• THE FROD, SWITCH & MFG. CO., Carlisle, Pa.

3

• HARDINGE CO., INC., 240 Arch St., York, Pa.

6

• HAYNES STELLITE CO., 725 S. Lindsay, Kokomo, Ind.

6

• IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

3

• KENSINGTON STEEL CO., 305 Kensington Ave., Chicago 28, Ill.

5-6

• McLAHANAH & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa.

2-3-4-5

• McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.

3-4

MIDVALE CO., Mieshtown, Philadelphia, Pa.

7

PEKOR IRON WORKS, Ft. of E. 9th Ave., Columbus, Ga.

2-4

• PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.

5

• ROGERS IRON WORKS CO., Jep- lin, Mo.

3

• STOODY CO., Whittier, Calif.

6

• STAR EXPANSION PRODUCTS CO., INC., 147 Cedar St., New York 6, N.Y.

6

• STULZ-SICKLES CO., 134 Lafayette St., Newark 5, N.J.

5

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

3-4-5

• THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.

3-4

• VICTOR EQUIPMENT CO., 844 Folsom St., San Francisco 7, Calif.

6

• VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

6-7

WALL COLMONY CORP., 19345 John R St., Detroit 3, Mich.

6

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

3-4

• YUBA MFG. CO., 331 California St., San Francisco 4, Calif.

1-2

• LONE STAR CEMENT CORP., 100 Park Ave., New York 17, N.Y.

MARQUETTE CEMENT MFG. CO., 20 N. Wacker Dr., Chicago 6, Ill.

• MEDUSA PORTLAND CEMENT CO., 1000 Midland Bldg., Cleveland 15, Ohio

• PENN-DIXIE CEMENT CORP., 60 E. 42nd St., New York 17, N.Y.

• UNIVERSAL ATLAS CEMENT CO., 100 Park Avenue, New York 17, N.Y.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

LANDIS STEEL CO., 116 West A St., P.O. Box 248, Picher, Okla.

• MACDONALD ENGR. CO., 188 W. Randolph St., Chicago 1, Ill.

MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.

THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

• NOBLE COMPANY, 1860 Seventh St., Oakland 20, Calif.

F. L. SMITH & CO., 11 West 42nd St., New York 34, N.Y.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WESTERN KNAPP ENGINEERING, 760 Folsom St., San Francisco, Calif.

• WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.

**CEMENT COOLERS (see Coolers, Bulk Cement)**

**CEMENT DISPERSION AGENTS**

• DEWEY AND ALMY CHEMICAL CO., 62 Whitemore Ave., Cambridge 40, Mass.

A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

MAGIC CHEMICAL CO., 118 Crescent St., Brooklyn 2, Mass.

THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio

MONSANTO CHEMICAL CO., PHOSPHATE DIV., 1700 S. Second St., St. Louis 4, Mo.

REARDON INDUSTRIES, INC., 2837 Stanton Ave., Cincinnati 6, Ohio

VERISSET CORP., 150 Nassau St., New York City 38, N.Y.

**CEMENT AND MASONRY COLORS**

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

CHASE CONCRETE MACHINERY CO., 94 Grandview Avenue, Buffalo 23, New York

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• COLUMBIAN CARBON CO., MAPICO COLOR DIV., Binney & Smith Co., Dist. 380 Madison Ave., New York 17, N.Y.

• FRANK D. DAVID CO., 2704 Santa Fe Ave., Los Angeles 38, Calif.

A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

LANDERS-SEGAL COLOR CO., 78 Delevan St., Brooklyn 31, N.Y.

THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio

MINERAL PIGMENTS CORP., Washington Blvd., Muirkirk, Md.

REARDON INDUSTRIES, INC., 2837 Stanton Ave., Cincinnati 6, Ohio

• REICHARD-COULSTON INC., 320 Broadway, New York 7, N.Y.

J. LEE SMITH & CO., INC., 23 Ann Street, New York 38, N.Y.

SMITH CHEMICAL & COLOR, INC., 59 John St., Brooklyn 1, N.Y.

TAMMUS INDUSTRIES, INC., 228 N. LaSalle St., Chicago 1, Ill.

C. K. WILLIAMS & CO., 640 N. 13th St., Easton, Pa.

**CEMENT PLANT, Engineers & Contractors**

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

• NOBLE CO., 1860-7th St., Oakland 20, Calif.

• THE T. L. SMITH CO., 2835 N. 32nd St., Milwaukee 10, Wis.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.

• WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

**CENTRIFUGES, Cement Slurry, etc.**

BIRD MACHINE COMPANY, South Walpole, Massachusetts

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

OLIVER UNITED FILTERS, INC., 2900 Glascott St., Oakland 1, Calif.

F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.

• A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

### CHAIN, Dredge and Shovel

- AMERICAN CHAIN DIVISION, AMERICAN CHAIN & CABLE CO., INC., York, Pennsylvania
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

### CHAIN DRIVES (see Drives)

### CHAIN, Elevating and Conveying

- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.
- DIAMOND CHAIN CO., INC., 402 Kentucky Ave., Indianapolis 7, Ind.
- ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.
- THE FAIRALLOY CO., 150th & Lexington Aves., Harvey, Ill.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENSINGTON STEEL CO., 505 Kensington Ave., Chicago 28, Ill.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.
- TAYLOR-WHARFON IRON & STEEL CO., High Bridge, N.J.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio
- WITTEMANN MACHINERY CO., Farmington, N.J.

### CHAIN, Heat Exchanger

- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- VULCAN IRON WORKS, 730 S. Main St., Wilkes-Barre, Pa.

### CHAIN LINKS, Fittings, Hooks, etc.

- AMERICAN CHAIN DIVISION, AMERICAN CHAIN & CABLE CO., INC., York, Pennsylvania
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- KENSINGTON STEEL CO., 505 Kensington Ave., Chicago 28, Ill.
- THE THOMAS LAUGHLIN CO., 143 Fare Street, Portland 6, Maine
- LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.

### CHAINS, Drag

- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

### ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.

- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- KENSINGTON STEEL CO., 505 Kensington Ave., Chicago 28, Ill.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- SMITH ENGINEERING WORKS, 352 Capitol Dr., Milwaukee 12, Wis.
- TAYLOR-WHARFON IRON & STEEL CO., High Bridge, N.J.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### CHUTE LININGS, Rubber

- A&A MFG. CO., 2017 W. Clybourn St., Milwaukee 3, Wis.
- THE AMERICAN RUBBER MFG. CO., 1145 Park Avenue, Oakland 8, Calif.
- BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Massachusetts
- CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.
- GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.
- B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio
- THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- PIONEER RUBBER MILLS, 353 Sacramento St., San Francisco 11, Calif.
- RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willert St., Passaic, N.J.
- REPUBLIC RUBBER DIV., LEE RUBBER & TIME CORP., Albert St., Youngstown 11, Ohio
- THERMOI CO., Trenton, N.J.
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

### CHUTE LININGS, Other

- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- REES BLOW PIPE MFG. CO., 346 Seventh St., San Francisco 3, Calif.
- STOODY CO., Whittier, Calif.
- STULZ-SICKLES CO., 134 Lafayette St., Newark 5, N.J.
- TAYLOR-WHARFON IRON & STEEL CO., High Bridge, N.J.
- THOMAS FOUNDRIES, INC., 3800 10th Ave., P. O. Box 1111 Birmingham 1, Ala.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### CHUTES

- BARBER-GREENE COMPANY, 400 N. Highland Avenue, Aurora, Ill.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- CONTINENTAL GIN CO., 4500 5th Ave. South, Birmingham, Alabama
- DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- HENDRICK MFG. CO., 39 Duffell St., Carbondale, Pa.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

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### THE KIRK & BLUM MFG. CO., 3120 Ferrer St., Cincinnati 9, Ohio

- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.
- MECKUM ENGINEERING INC., Dayton Rd., Ottawa, Ill.
- REES BLOW PIPE MFG. CO., 346 Seventh St., San Francisco 3, Calif.

### THE STANDARD METAL MFG. CO., 110 Center St., Moline, Ill.

- STRAUB MFG. CO., INC., 507 Chestnut St., Oakland 20, Calif.
- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### CHUTES, Spiral

- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.
- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.

### CIRCUIT BREAKERS, Electric

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

### CIRCUIT TESTERS, Electric

- ATLAS POWDER COMPANY, Wilmington 99, Delaware
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### CLARIFIERS, AIR (see Air Filters)

### CLARIFIERS, OIL (see Air Filters)

### CLASSIFIERS

- 1. Air
- 2. Electrostatic
- 3. Hydrolic

### BIRD MACHINE COMPANY, South Walpole, Massachusetts

- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Branch St., Chicago 22, Ill.
- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.

- 3. DEISTER MACHINE CO., 1933 East Wayne St., Fort Wayne 4, Ind.

- THE DORE CO. ENGRS., Barry Place, Stamford, Conn.

- EAGLE IRON WORKS, 127 Holcomb Ave., Des Moines 4, Iowa

- 3. EQUIPMENT ENGINEERS INC., 41 Sutter St., San Francisco 4, Calif.

- HARDINGE CO., INC., 240 Arch St., York, Pa.

- 1—2—3. KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

- 1—3—3. THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

### OLIVER UNITED FILTERS INC., 2900 Glascock St., Oakland 1, Calif.

- 3. SANDCONE SEPARATOR CO., 1709 West 8th St., Los Angeles 17, Calif.

- 3. SMITH ENGINEERING WORKS, 332 East Capitol Dr., Milwaukee 12, Wis.

- 3. STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.

- 1. WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

### CLASSIFIERS, SAND (see Sand Recovery Machinery)

### CLEANING MACHINES, Bag (see Bag Cleaners)

### CLINKER COOLERS

- 1. Grate
- 2. Rotary

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

- 1—3. THE FAIRALLOY CO., 150th & Lexington Aves., Harvey, Ill.

- 1. FULLER CO., 128 Bridge St., Canasauqua, Pa.

- 1. W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.

- 1—2. KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

- 1—2. MANITOWOC SHIPBUILDING, INC., 16th & River Sts., Manitowoc, Wis.

- 2. NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.

- 1. SINTERING MACHINERY CORP., Netcong, N.J.

- 1. F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

- 1—2. STRONG-SCOTT MFG. CO., 481 Taft St., N.E., Minneapolis 13, Minn.

- 2. TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

- 2. VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

- 1. WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 15, Calif.

### CLIPS, WIRE ROPE (see Wire Rope Fittings)

### CLOTH, WIRE (see Wire Cloth)

### CLUTCH FACINGS (see Brake Linings)

### CLUTCHES

- DODGE MFG. CORP., 300 S. Union St., Mishawaka, Ind.

- DYNAMIC CORP., 3307 14th Ave., Kenosha, Wis.

- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

- STEARNS MAGNETIC INC., 675 S. 28th St., Milwaukee 46, Wis.

### COAL PULVERIZING EQUIPMENT

- AMERICAN PULVERIZER CO., 1245 Macklin Avenue, St. Louis, Mo.

## DIRECTORY

• THE BARCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y.

BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio

• COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Bronch St., Chicago 22, Ill.

• EAGLE CRUSHER CO., INC., 900 Harding Way East, Galloway, Ohio

• GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.

• HARDINGE CO., INC., 240 Arch St., York, Pa.

• IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.

• THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

• F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

• STURTEVANT MILL CO., 102 Clifton St., Dorchester, Boston 22, Mass.

• UNIVERSAL ENGINEERING CORP., 623 C Ave., N.W., Cedar Rapids, Iowa

WHITING CORP., Harvey, Ill.

### COAL PULVERIZING EQUIPMENT, Direct-Firing Unit Mills

• THE BARCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y.

• COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Bronch St., Chicago 22, Ill.

• HARDINGE CO., INC., 240 Arch St., York, Pa.

• IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

THE STRONG-SCOTT MFG. CO., 451 Taft St., N.E., Minneapolis 13, Minn.

### COLORS, Cement (see Cement and Masonry Colors)

### COMMUNICATIONS SYSTEMS

MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.

MM ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.

RADIO CORP. OF AMERICA, RCA VICTOR DIV., Front & Cooper Sts., Camden 2, N.J.

### CONCENTRATING TABLES

• THE CLEVELAND VIBRATOR CO., 2828 Clinton Avenue, Cleveland 13, Ohio

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 5248, Denver 17, Colo.

• THE DEISTER CONCENTRATOR CO., 925 Glasgow Ave., Fort Wayne 1, Ind.

• DEISTER MACHINE COMPANY, 1933 E. Wayne St., Fort Wayne 4, Ind.

• THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

STRAUB MFG. CO., INC., 307 Chestnut St., Oakland 26, Calif.

• WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

• CHARLES E. WOOD, 906 West Water St., Milwaukee, Wis.

### CONCRETE BLOCK (Faced)

• MARBLE FACE BLOCKS, INC. (MARSLUX), Michigan Ave., Kenosha, Wis.

### CONCRETE BLOCK MACHINES (see Block Machines)

### CONCRETE CONTROL SYSTEMS, Quality

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

MEM ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.

• RICHARDSON SCALE CO., 666-698 Van Houten Ave., Clifton, N.J.

• SCIENTIFIC CONCRETE SERVICE CORP., 724 Salem Ave., Elizabeth 3, N.J.

### CONCRETE, Dry-Batched

SAKRETE, INC., Fisher Ave. & B&O R.R., Cincinnati 17, Ohio

### CONCRETE MASONRY REINFORCING

• DUR-O-WAL PRODUCTS, INC., P.O. Box 628, Syracuse 1, N.Y.

• THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.

### CONCRETE MIXERS

1. Block Plant
2. Continuous
3. Job, Portable

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio

1-2

W. A. ANTHONY ENGR. CO., Berea, Ohio

2

J. W. APPLEY & SON, INC., 831 9th St. North, St. Petersburg 2, Fla.

1

• BERGEN MACHINE & TOOL CO., INC., 189 Franklin Avenue, Nutley 10, New Jersey

1

• BESSER MFG. CO., Alpena, Mich.

1

• CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

3

CHASE CONCRETE MACHINERY CO., 94 Grandview Ave., Buffalo 23, N.Y.

1-2-3

GEO. C. CHRISTOPHER & SON, INC., 1220 Blaine, Box 607, Wichita 1, Kansas

3-3

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

1

• CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, N.C.

3

• CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.

1

• DES PLAINES CONCRETE PROD. MACHINERY, 930 North Ave., Des Plaines, Ill.

1

• W. E. DUNN MANUFACTURING CO., 413 West 33rd St., Holland, Mich.

1-2

• FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.

1

• A dot before name indicates ROCK PRODUCTS Advertiser

• GENERAL ENGINES CO., INC., 207 Hunter St., Gloucester City, N.J.

1

GILSON BROTHERS CO., Fredonia, Wis.

3

F. C. GEORGE MACHINE CO., INC., 100 S. Westmoreland Drive, Orlando, Fla.

1

• THE JAEGER MACHINE CO., 350 W. Spring St., Columbus 16, Ohio

3

J. A. JONES CONCRETE MACHINERY CO., 108 Horning Road, Pittsburgh 34, Pa.

2

KENT MACHINE COMPANY, Cuyahoga Falls, Ohio

2

• TRUCK-MAN DIV., THE KNICKERBOCKER CO., 663 Liberty St., Jackson, Mich.

1-3

KWIK MIX COMPANY, Port Washington, Wis.

1-3-3

• LE ROI COMPANY, 1706 South 68th St., Milwaukee 14, Wis.

3

LITH-I-BAR CO., Holland, Mich.

1

• MIXERMOBILE MANUFACTURERS, 6855 N.E. Halsey St., Portland, Ore.

3

MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK INC., Fremont St., Elmore, Ohio

1

• THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.

1

• PRASCHAK MACHINE CO., Marshfield, Wis.

1-3-3

• THE T. L. SMITH CO., 2835 N. 32nd St., Milwaukee 10, Wis.

1-2-3

BLYSTONE DIV., STANDARD SAND & MACH. CO., 349 W. Washington, Chicago 6, Ill.

1

• STEARNS MFG. CO., INC., 600 E. Beecher, Adrian, Mich.

1

• TRUXA MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.

1

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

1-2-3

• WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.

1-2-3

WITTEMANN MACHINERY CO., Farmington, N.J.

1

• WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

1-2-3

### CONCRETE MIXERS, Truck (see Bodies, Ready Mixed Concrete)

### CONCRETE MIXING PLANTS (see Central Mixing Plants)

### CONCRETE PAINTS AND COATINGS

CHASE CONCRETE MACHINERY CO., 94 Grandview Ave., Buffalo 23, N.Y.

2

E. D. CODDINGTON MFG. CO., 5024 N. 37th Street, Milwaukee 9, Wisconsin

9

A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

10

MAGIC CHEMICAL CO., 118 Crescent St., Brockton 2, Mass.

11

THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 2, Ohio

12

MEDEUSA PORTLAND CEMENT CO., 1000 Midland Bldg., Cleveland 15, Ohio

13

### CONCRETE PREMIX PLANTS, Dry

• BUTLER BIN CO., 989 Blackstone Ave., Waukesha, Wis.

• CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

### CONCRETE PRODUCTS CURING EQUIPMENT (see Kilns, Concrete Curing)

### CONCRETE PRODUCTS HANDLING EQUIPMENT

ANCHOR CONCRETE MACHINERY COMPANY, 1191 Fairview Avenue, Columbus 12, Ohio

• BUILDERS EQUIPMENT CO., 4012 North Central, Phoenix, Ariz.

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONCRETE EQUIPMENT CO., 544 Ottawa Ave., Holland, Mich.

• CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.

• CONTINENTAL GIN CO., 4500 8th Ave 3, Birmingham, Ala.

• EASTON CAR & CONSTRUCTION CO., Easton, Pa.

• GERLINGER CARRIER CO., Dallas, Ore.

F. C. GEORGE MACHINE CO., INC., 100 S. Westmoreland Drive, Orlando, Fla.

THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• KOEHRING CO., 3026 W. Concordia Ave., Milwaukee 16, Wis.

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK, INC., Fremont St., Elmore, Ohio

• THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.

### CONCRETE SPECIALTY FORMS

1. Bins, Tanks, Silos

2. Burial Vault

3. Curb & Gutter

4. Fence Posts and Poles

5. Floor Systems

6. Haar & Root Stak

7. Garbage Disposal Unit

8. Garden & Ornamental Furniture

9. Jait

10. Laundry Tray

11. Manholes, Curbing & Blocks

12. Partition

13. Pipe, Culvert & Sewer

14. Septic Tank

15. Sill & Lintel

16. Step, Precast

17. Tile & Conduit

18. Walls, Foundation

J. W. APPLEY & SON, INC., 831 9th St. North, St. Petersburg 2, Fla.

3-4-5-6-7

11-14-15-16-17

• BERO VAULT COMPANY, 1620 Lucas Hunt Road, St. Louis 20, Mo.

1

• BERG MACHINERY & TOOL CO., INC., 189 Franklin Avenue, Nutley 19, New Jersey

11

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.

3

CARPENTER MFG. CO., R.F.D. No. 1, Box 470, Richmond 23, Va.

14

CHASE CONCRETE MACHINERY CO., 94 Grandview Ave., Buffalo 23, N.Y.

3-4-8-15-16

## DIRECTORY

- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
A—4—5—6—11  
12—13—14—15—16—17—18
- CONCRETE EQUIPMENT CO., 4012 Flyer Ave., St. Louis 9, Mo.  
S—6—9—15—17
- CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, No. Car.  
8—12—14—17
- CONCRETE POST FORM CO., Cedar Falls, Iowa  
4
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.  
A
- DES PLAINES CONCRETE PROD. MACHINERY, 930 North Ave., Des Plaines, Ill.  
8—11
- DOUGLAS FIR PLYWOOD ASSOC., 1119 A St., Tacoma 2, Wash.  
A—9—13—18
- W. E. DUNN MANUFACTURING CO., 413 West 33rd St., Holland, Mich.  
5—6—9—17—18
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.  
17
- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.  
5
- HOUSTON CONCRETE PIPE CO., 6600 Washington Ave., P.O. Box 7767, Houston 7, Texas  
11—14
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
A
- KEWANEE MANUFACTURING CO., Kewanee, Ill.  
15
- THE KIRK & BLUM MFG. CO., 3120 Forster St., Cincinnati 9, Ohio  
3—4—9—15
- PRECASTER, INC., 3211 Beech St., Cincinnati 17, Ohio  
4—6—9—15
- QUINN WIRE & IRON WORKS, Boone, Iowa  
4—11—13—14
- ROGER F. WILLIAMS, 3420 West 9th St., Des Moines 15, Iowa  
16
- STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.  
13
- THERMOFLECTOR CORP., North Sioux City, S.D.  
18
- THOMAS STEEL FORMS, 25257 West Eight Mile Road, Detroit 19, Mich.
- VENTO STEEL PRODUCTS CO. INC., 230 Colorado Ave., Buffalo, N.Y.  
5
- WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.  
A
- ZEIDLER CONCRETE PRODUCTS MACHINERY CO., Newell & Mobile St., Waterloo, Iowa  
13
- CONCRETE SPECIALTY MACHINES**
  1. Chimney & Flue Block
  2. Drain Tile
  3. Fence Post
  4. Joist & Slab
  5. Ornamental Fence Blocks
  6. Pipe, Culvert & Sewer
  7. Roof Tile
  8. Sill & Lintel
  9. Silo Stave
  10. Tile & Conduit
- J. W. APPLY & SON, INC., 831 9th St. North, St. Petersburg 2, Fla.  
1
- BESSER MPG. CO., Alpena, Mich.  
5—7
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
1—2—3—6—7—8

- CONCRETE EQUIPMENT CO., 544 Ottawa St., Holland, Mich.  
1—2—3—5—8
- CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, No. Car.  
4—8
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.  
1
- GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N.J.  
1—6
- HOUSTON CONCRETE PIPE CO., 6600 Washington Ave., P.O. Box 7767, Houston 7, Texas  
4
- LITHI-BAR CO., Holland, Mich.  
3
- MULTIPLEX MACHINERY CO., DIV. OF MULTIPACK, INC., Fremont St., Elmo, Ohio  
1
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.  
7
- QUINN WIRE & IRON WORKS, Boone, Iowa  
4
- UNIVERSAL CONCRETE PIPE CO., 297 S. High St., Columbus 15, Ohio  
4
- ZEIDLER CONCRETE PRODUCTS MACHINERY CO., Newell & Mobile St., Waterloo, Iowa  
4
- CONCRETE WATER-PROOFING AND DAMP-PROOFING**
- E. D. CODDINGTON MFG. CO., 5024 N. 37th Street, Milwaukee 9, Wis.
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- DEWEY AND ALMY CHEMICAL CO., 62 Whittemore Ave., Cambridge 40, Mass.
- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.
- THE MASTER BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio
- MEDUSA PORTLAND CEMENT CO., 1000 Midland Bldg., Cleveland 15, Ohio
- REARDON INDUSTRIES, INC., 2837 Stanton Ave., Cincinnati 6, Ohio
- SPRAY-O-BONE, Milwaukee, Wis.
- TAMMS INDUSTRIES, INC., 228 N. LaSalle St., Chicago 1, Ill.
- CONDUIT, Electrical**
- JOHNS-MANVILLE, 22 E. 40th St., New York 16, N.Y.
- CONTROL SYSTEMS**
  1. Draft
  2. Pressure
  3. Temperature
- BAILEY METER CO., 1050 Ivanhoe Road, Cleveland 10, Ohio  
1—2—3
- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.  
1—2—3
- THE HAYS CORP., 742 East 8th St., Michigan City 21, Ind.  
1—2—3
- CONTROLS, Bin and Tank Level**
- THE BIN-DICATOR COMPANY, 13946 Korcheval Avenue, Detroit 15, Michigan
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.
- CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.
- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.
- THE HAYS CORP., 742 E. 8th St., Michigan City 21, Ind.
- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio**
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.
- RICHARDSON SCALE CO., 646-698 Van Houten Ave., Clifton, N.J.
- SYNTRON COMPANY, 430 Lexington Ave., Homer City, Pa.
- CONVERTERS, Electric**
- ALIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 7, Wis.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- SYNTRON CO., 430 Lexington Ave., Homer City, Pa.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 20, Pa.
- CONVEYOR BELT TRIP-PERS**
- BARBER-GREENE COMPANY, 400 N. Highland Avenue, Aurora, Ill.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 7, Wis.
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 925 N. Fourth St., Columbus 16, Ohio
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- LIPPmann ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- TRANSALL, INCORPORATED, 109 N. 11th St., Birmingham, 4, Ala.
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio
- CONVEYOR IDLERS, Belt**
- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 7, Wis.
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.
- THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio
- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 925 N. Fourth St., Columbus 16, Ohio
- JOY MANUFACTURING CO., Oliver Bldg., Pittsburgh 22, Pa.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- LIPPmann ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.
- PIONEER ENGINEERING WORKS, INC., 1815 Central Ave., N.E., Minneapolis 13, Minn.
- ROGERS IRON WORKS CO., Joplin, Mo.
- SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.
- THE STANDARD METAL MFG. CO., 110 Center St., Malinta, Ohio
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- TRANSALL, INCORPORATED, 109 N. 11th St., Birmingham 4, Ala.
- TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill.
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio
- CONVEYORS, Materials Handling**
  1. Aviation
  2. Air
  3. Apron
  4. Bolt
  5. Bolt, Portable
  6. Drag
  7. Overhead Bridge
  8. Fan
  9. Screw
  10. Vibrating
  11. Weight Recording
- AJAX FLEXIBLE COUPLING CO., INC., Westfield, N.Y.  
8—10
- THE AMERICAN RUBBER MFG. CO., 1145 Park Avenue, Oakland 8, Calif.  
4
- BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio  
4—5
- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.  
3—4—5—6
- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.  
4—5—6
- BEAUMONT BIRCH CO., 1505 Rock St., Philadelphia 2, Pa.  
2—3—4—5—9—10—11
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
3—4—5
- BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio  
4—5—6
- BROOKS EQUIPMENT & MFG. CO., 2018 Davenport Road S.E., Knoxville 8, Tenn.  
5
- BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.  
4—5
- CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky.  
1B
- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 7, Wis.  
3—4—5—6
- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado  
3—4
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
4
- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1315 N. Branch St., Chicago 22, Ill.  
2
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.  
4—5—6
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.  
3—4—5—6—9—10
- DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 5268, Denver 17, Colo.  
3
- DIAMOND IRON WORKS, DIV. GOODMAN MANUFACTURING CO., 1728 North 2nd St., Minneapolis 11, Minn.  
3—4—5

A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

**EAGLE CRUSHER CO., INC.**, 900 Heding Way East, Gallon, Ohio  
3-4

**THE FAHRALLOY CO.**, 190th & Lexington Aves., Harvey, Ill.  
6

**THE FAIRFIELD ENGINEERING CO.**, 224 Barnhart St., Marion, Ohio  
3-4-5-6-7-8-9-11

**FANNING SCHUETT ENGINEERING CO.**, 4225 N. Third Street, Philadelphia 40, Pa.  
3-4-5-6-7-8-9

**PLEXOVEXYER MFG. CO.**, 1220 E. Avenue St., Denver 19, Colo.  
4

**FULLER CO.**, 128 Bridge St., Catskill, N.Y.  
1-2

**GENERAL ENGINES CO., INC.**, 307 Hunter St., Gloucester City, N.J.  
4

**F. C. GEORGE MACHINE CO., INC.**, 100 S. Westminster Drive, Orlando, Fla.  
4

**GEO HAISS MFG. CO., INC.**, Div. Pettibone Mulliken Corp., 350 Fifth Ave., New York 1, N.Y.  
3-4-5-6

**HARDINGE CO., INC.**, 240 Arch St., York, Pa.  
3

**HERCULES STEEL PROD. CORP.**, Sherman Street, Gallon, Ohio  
5

**HEWITT-ROBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.  
4-5-10

**HOUSTON CONCRETE PIPE CO.**, 6600 Washington Ave., P.O. Box 7767, Houston 7, Texas  
6

**IOWA MFG. CO.**, 916-16th St., N.E., Cedar Rapids, Iowa  
4-5

**THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio  
3-4-5-6-7-8-9-10-11

**C. S. JOHNSON CO.**, P.O. Box 71, Champaign, Ill.  
1-9-11

**JOHNSON & HOHLER, INC.**, P.O. Box 102, Lansdowne, Pa.  
4

**JOY MFG. CO.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
4

**KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.  
3-3-4-5-6-7-8-9-10-11

**KOLMAN MFG. CO.**, West 12th St., R.R. Stock Falls, S.D.  
4-5

**LANDIS STEEL CO.**, 116 West A St., P.O. Box 248, Fisher, Okla.  
4

**LINK-BELT COMPANY**, 367 N. Michigan Ave., Chicago 1, Ill.  
1-3-4-5-6-7-8-9-10

**LIPPMANN ENGINEERING WORKS**, 4603 W. Mitchell St., Milwaukee 14, Wis.  
3-4-5-6-7-8-9-10-11

**E. F. MARSH ENGR. CO.**, 4324 W. Clayton Ave., St. Louis 10, Mo.  
3-4-5-7

**MATERIAL HANDLING INC.**, 4985 Fyler Ave., St. Louis 9, Mo.  
4-5-6

**MELANAHAN & STONE CORP.**, Wall & Jackson Sts., Hollidaysburg, Pa.  
4-9

**MERRICE SCALE MFG. CO.**, 180 Autumn St., Passaic, N.J.  
11

**NAYLOR PIPE CO.**, 1237 E. 92nd St., Chicago 19, Ill.  
3

**NOBLE CO.**, 1860-7th St., Oakland 20, Calif.  
4

**THE OLIVER CORP.**, A. B. FARQUHAR DIV., 142 N. Duke St., York, Pa.  
4-5-6

**PIONEER ENGINEERING WORKS, INC.**, 1915 Central Ave. N.E., Minneapolis 13, Minn.  
3-4-5-6

**PIONEER RUBBER MILLS**, 253 Sacramento St., San Francisco 11, Calif.  
4-5

**PRASCHAK MACHINE CO.**, Marshfield, Wis.  
4

**QUAKER RUBBER CORP.**, Tacony & Calmy Sts., Philadelphia 24, Pa.  
4-5

**REES BLOW PIPE MFG. CO.**, 340 Seventh St., San Francisco 3, Calif.  
3-4-6

**W. A. RIDDELL CORP.**, Bucyrus, Ohio  
4

**ROGERS IRON WORKS CO.**, Jeplin, Mo.  
3-4-5

**SAUERMAN BROS., INC.**, 530 S. Clinton St., Chicago 7, Ill.  
4

**SIMPLY ENGINEERING CO.**, 213 S. Oak St., Durand, Mich.  
8-10

**SINTERING MACHINERY CORP.**, Notcong, N.J.  
11

**F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.  
2-10

**SMITH ENGINEERING WORKS**, 532 East Capitol Dr., Milwaukee 12, Wis.  
3-4

**SPROUT WALDRON & CO., INC.**, Munsey, Pa.  
3-4-5-9

**STEPHENS-ADAMSON MFG. CO.**, Ridgeway Ave., Aurora, Ill.  
3-4-6-7-8-9-10-11

**ST. REGIS PAPER CO.**, 230 Park Ave., New York 17, N.Y.  
4-9-10-11

**SYNTRON COMPANY**, 450 Lexington Ave., Homer City, Pa.  
10

**TRANSALL INCORPORATED**, 109 N. 11th St., Birmingham 4, Ala.  
4

**TRIANGLE ENGINEERING CO.**, 2948 W. 26th St., Chicago 23, Ill.  
3-4-5-6-9

**UNIVERSAL ENGINEERING CORP.**, 625 C. Ave., N.W., Cedar Rapids, Iowa  
3-4-5

**UNIVERSAL ROAD MACHINERY CO.**, 27 Emrick St., Kingston, N.Y.  
3-4

**UNITED STATES RUBBER CO.**, 1230 Ave. of the Americas, New York 20, N.Y.  
4

**VACU-BLAST CO.**, Belmont, Calif.  
3

**VIBRO-PLUS PRODUCTS, INC.**, 54-11 Queens Blvd., Woodside 77, N.Y.  
10

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
3-4-9

**WEBSTER MFG. CO.**, West Hall St., Tiffin, Ohio  
3-4-5-9

**WESTERN MACHINERY CO.**, 760 Polson St., San Francisco 7, Calif.  
4

**WILLARD CONCRETE MACHINERY CO., LTD.**, 11700 Wright Rd., Lynnwood, Calif.  
1-4

**WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC.**, 813 Montgomery St., St. Louis 6, Mo.  
3-9

**WITTEMANN MACHINERY CO.**, Farmington, N.J.  
4

**ZEIDLER CONCRETE PRODUCTS MACHINERY CO.**, Newell & McBride Sts., Waterloo, Iowa  
4-6

**COOLERS, Bulk Cement**

**FULLER CO.**, 128 Bridge St., Catskill, Pa.  
1-2

**W. P. HEINEKEN, INC.**, 50 Broad St., New York 3, N.Y.  
1-2

**KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.  
1-2

**F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.  
1-2

**TAYLOR ENGINEERING & MFG. CO.**, Allentown, Pa.  
1-2

**WESTERN PRECIPITATION CORP.**, 1016 W. Ninth St., Los Angeles 15, Calif.  
1-2

**COOLERS, Cement Clinker (see Clinker Coolers)**

**CORRECTING, BASINS, Slurry**

**THE DORB CO., ENGRS.**, Barry Place, Stamford, Conn.  
1-2

**F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.  
1-2

**COUPLINGS, Hose (see Hose Fittings)**

**COUPLINGS, Pipe**

**BLACK BROS.**, 503 4th Ave., Mendota, Ill.  
1-2

**CONTINENTAL GIN CO.**, 4500 5th Ave. South, Birmingham, Alabama  
L. B. FOSTER CO., P. O. Box 1447, Pittsburgh 30, Pa.  
1-2

**COUPLINGS, Shaft, Flexible Shaft (see Drives)**

**CRANE, Boom, Cable Stabilizer, Traveling**

**BEDFORD FOUNDRY & MACHINE CO.**, 1000 5th Ave., Bedford, Ind.  
1-2

**GENERAL EXCAVATOR CO.**, Marion, Ohio  
1-2

**HARNISCHFEGER CORP.**, 400 West National Ave., Milwaukee 46, Wis.  
1-2

**KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, N.Y.  
1-2

**NOBLE COMPANY**, 1860 Seventh St., Oakland 20, Calif.  
1-2

**"QUICK-WAY" TRUCK SHOVEL CO.**, 4150 Josephine St., Denver, Colo.  
1-2

**WHITING CORP.**, 159th & Lathrop, Harvey, Ill.  
1-2

**CRANES, Crawler**

- 1. Diesel
- 2. Electric
- 3. Gasoline
- 4. Electric Generator

**AMERICAN HOIST & DERRICK CO.**, 63 S. Robert St., St. Paul 1, Minn.  
1-2-3-4

**BAKER-RAULANG CO.**, West 88th St., Cleveland, Ohio  
2-4

**OHIO LOCOMOTIVE CRANE CO.**, Bucyrus, Ohio  
1-2-3-4

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
1-2-3

**CRANES, Locomotive**

- 1. Diesel
- 2. Electric
- 3. Gasoline
- 4. Electric Generator

**AMERICAN HOIST & DERRICK CO.**, 63 S. Robert St., St. Paul 1, Minn.  
1-2-3-4

**BALDWIN-LIMA-HAMILTON CORP.**, Construction Equipment Div., South Main St., Lima, Ohio  
1-2-3

**BAY CITY SHOVELS, INC.**, Bay City, Michigan  
1-2-3

**BUCYRUS-ERIE CO.**, South Milwaukee, Wis.  
1-2-3

**CLARK EQUIPMENT CO.**, Construction Machinery Div., Springfield Place, Battle Creek 60, Mich.  
1-2-3

**GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio  
1-2

**HANSON CLUTCH & MACHINE CO.**, Tiffin, Ohio  
1-2

**HARNISCHFEGER CORP.**, 4400 W. National Ave., Milwaukee 46, Wis.  
1-2-3

**HYSTER CO.**, 2918 N.E. Clackamas St., Portland 8, Ore.  
1-2

**INSLEY MFG. CORP.**, 801 N. Olney St., Indianapolis 6, Ind.  
1-2-3

**KOEHRING COMPANY**, 3026 W. Concordia Ave., Milwaukee 16, Wis.  
1-2

**LINK-BELT SPEEDER CORP.**, 1201 Sixth St., S.W., Cedar Rapids, Iowa  
1-2-3

**LITTLE GIANT CRANE & SHOVEL INC.**, East 16th & Howard Drive, Des Moines 13, Iowa  
1-2-3

**NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.  
1-2-3

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## DIRECTORY

- OSGOOD-GENERAL, P. O. Box 515, (Osgood & Cheney Ave.), Marion, Ohio
- PATTERSON FOUNDRY & MACHINE CO., East Liverpool, Ohio
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- "QUICK-WAY" TRUCK SHOVEL CO., 4130 Josephine St., Denver, Colo.
- SCHIELE BANTAM CO., Park St., Waverly, Iowa
- THE THEW SHOVEL CO., Lorain, Ohio
- TRACTOR & EQUIPMENT CO., 10000 S. Ridgeland Ave., Oak Lawn, Ill.
- UNIT CRANE & SHOVEL CORP., 6411 W. Burnham St., Milwaukee 14, Wis.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- CRANES, Hammer Head, Ship, etc.**
- AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.
- NORTHWEST ENGINEERING CO., 135 S. LaSalle St., Chicago 3, Ill.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio
- CRIMPERS, BLASTING CAP (see Blasting Supplies)**
- CRUSHERS**

  - 1. Gyrotary
  - 2. Hammer
  - 3. Impact
  - 4. Jaw
  - 5. Laboratory
  - 6. Ring-Roll
  - 7. Roll
  - 8. Rotor

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.  
1-2-3-4-5-7
- AMERICAN BRAKE SHOE COMPANY, 230 Pork Avenue, New York 17, New York  
1-2-3-4-7
- AMERICAN PULVERIZER COMPANY, 1245 Mecklin Avenue, St. Louis 10, Missouri  
2-6
- AUSTIN-WESTERN DIV., BALDWIN-LIMA CORP., Aurora, Ill.  
4
- BACON-PIET CO., INC., 73 North Maple Avenue, Edgewood, N.J.  
4-5
- BALDWIN-LIMA-HAMILTON CORP., Eddysonne Div., Philadelphia 42, Pa.  
4-7
- BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY, Birdsboro, Penn.  
4-5-7
- BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio  
7
- BROOKS EQUIPMENT & MFG. CO., 2018 Davenport Road S.E., Knoxville 8, Tenn.  
2-4
- DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 3268, Denver 17, Colo.  
4-5-7
- DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.  
2-4-7
- EAGLE CRUSHER CO., INC., 900 Harding Way East, Galloway, Ohio  
2-3-4
- THE FAIRFIELD ENGINEERING CO., 324 Bernhart St., Marion, Ohio  
2
- FARREL-BACON, Ansonia, Conn.  
4
- THE GALIGHER CO., 545 W. 8th South St., Salt Lake City 4, Utah  
3
- GILSON BROTHERS CO., Fredonia, Wis.  
2
- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.  
2-3-4-5-6-7
- HAMMERMILLS, INC., (Subsidiary of Pettibone Mulliken Corp.), 4700 W. Division St., Chicago 40, Ill.  
2
- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.  
1-2-3-4-5-6-7
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.  
2
- IOWA MFG. CO., 916-16th St., N.E., Cedar Rapids, Iowa  
2-3-4-5-6-7
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
2-3-4-5-6-7
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.  
1-2-3-4-5-6-7
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.  
1-2-3-4-5-6-7
- MCALAHAN & STONE CORP., Well & Jackson Sts., Hollidaysburg, Pa.  
4-7
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.  
6-7
- MILLER EQUIPMENT CO., INC., P. O. Box 1566, Salisbury, No. Car.  
3-7
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.  
5
- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.  
1
- PATERSON FOUNDRY & MACHINE CO., 41 Helene St., East Liverpool, Ohio
- PENNSYLVANIA CRUSHER CO., 1710 Liberty Trust Bldg., Philadelphia 7, Pa.  
1-2-3-4-5-6-7
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.  
4-7
- PRASCHAN MACHINE CO., Marshfield, Wis.  
2
- W. A. RIDDELL CORP., Bucyrus, Ohio  
7
- ROGERS IRON WORKS CO., Jeplin, Mo.  
3-4-7
- SMITH ENGINEERING WORKS, 232 East Capitol Dr., Milwaukee 12, Wis.  
1-2-3-4-5-6-7
- SPROUT WALDRON & CO., INC., Munsey, Pa.  
3-5
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.  
6
- STRAUB MFG. CO., INC., 507 Chestnut St., Oakland 20, Calif.  
1-4-5
- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.  
2-4-5-6-7
- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.  
1-4-7
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa  
2-3-4-5-7
- UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.  
4
- WALDRON & CO., INC., 507 Chestnut St., Oakland 20, Calif.  
1-4-5
- WALDRIP ENGINEERING CO., 11810 Center St., Hollydale, Calif.  
8
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.  
1-2-3-4-5-6-7
- THE WEBB CORP., Webb City, Mo.  
4
- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.  
2-3-5-6-7
- CRUSHING AND SCREEN-ING PLANTS, Complete**
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.  
ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 2, Ohio
- AUSTIN-WESTERN DIV., BALDWIN-LIMA CORP., Aurora, Ill.
- BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.
- BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio
- DEWEY AND ALMY CHEMICAL CO., 62 Whitemore Ave., Cambridge 40, Mass.
- DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.
- EAGLE CRUSHER CO., INC., 900 Harding Way East, Galloway, Ohio
- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.
- IOWA MFG. CO., 916-16th St., N.E., Cedar Rapids, Iowa
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
- LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.
- ROGERS IRON WORKS CO., Jeplin, Mo.
- SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis.
- SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4900 S. Santa Fe Ave., Los Angeles 58, Calif.
- STRAUB MFG. CO., INC., 507 Chestnut St., Oakland 20, Calif.
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa
- UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.
- CUPOLAS, Rock Wool (see Rock Wool Cupolas and Equipment)**
- CURING COMPOUNDS, Concrete**
- AUTOLENE LUBRICANTS CO., PROTEX INDUSTRIAL DIV., 1321 W. Evans, Denver 9, Colo.
- DEWEY AND ALMY CHEMICAL CO., 62 Whitemore Ave., Cambridge 40, Mass.
- THE MASTEE BUILDERS CO., 7018 Euclid Ave., Cleveland 3, Ohio
- SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 Broadway, N. New York 6, N.Y.
- CURING ROOM DOORS**
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.
- STANDARD DRY KILN CO., 798 B. Harding, Indianapolis, Ind.
- CURING ROOM HEATERS**
- CHAMPION FUEL ENGINEERING CO., P. O. Box 3943, Detroit 37, Michigan
- LITTLEFORD BROS., INC., 453 E. Pearl St., Cincinnati 2, Ohio
- PRAT-DANIEL CORP., 2 Meadow St., So. Norwalk, Conn.
- CUTTER-HEADS, Dredging**
- EAGLE IRON WORKS, 127 Holcomb Ave., Des Moines 4, Iowa
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y.

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## DIRECTORY

- TAYLOR-WHARFON IRON & STEEL CO., High Bridge, N.J.
- CUTTERS, Fuse (see Blast-ing Supplies)**
- CUTTING WHEELS, Abrasive for Concrete**
- CLIPPER MFG. CO., 2900 Warwick, Kansas City 6, Mo.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willott St., Passaic, N.J.
- SIMMONDS ABRASIVE CO., Tacoma & Fralay Sts., Philadelphia 37, Pa.
- D**
- DEHYDRATORS (see Slurry Thickeners)**
- DERRICKS, Barge**
- AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.
- DAVO CORP., Davo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- DERRICKS, Stiff-Leg and Guy**
- AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.
- DAVO CORP., Davo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- R.C. STANHOPE, INC., 60 E. 43rd St., New York, N.Y.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- DETONATORS (see Blast-ing Supplies)**
- DEWATERING EQUIPMENT, Sand (see Sand Recovery Machinery)**
- DIAMOND DRILLING MACHINES**
- SPRAGUE & HENWOOD, INC., 221 W. Olive St., Scranton 2, Pa.
- DIAPHRAGMS, Pumps, Rubber**
- A & A MFG. CO., 2017 W. Clyburn St., Milwaukee 3, Wis.
- CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.
- DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 5266, Denver 17, Colo.
- GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.
- THE JAEGER MACHINE CO., 880 W. Spring St., Columbus 16, Ohio
- REPUBLIC RUBBER DIV., Lee Rubber & Tire Corp., Albert Street, Youngstown 1, Ohio
- RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willott St., Passaic, N.J.
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.
- WESTERN MACHINERY CO., 760 Fulton St., San Francisco 7, Calif.
- DIESEL ENGINES, Auto-motive**
- THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois
- CUMMINS ENGINE CO., INC., Columbus, Ind.
- GENERAL MOTORS CORP., DETROIT DIESEL ENGINE DIV., 13400 W. Outer Drive, Detroit 28, Mich.
- HEWITT-ROBINS INC., 666 Glenbrook Road, Stamford, Conn. 16
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- MACK TRUCKS, INC., Empire State Bldg., New York 1, New York
- DIESEL ENGINES, Station-ary**
  - 1. Less than 100 H.P.
  - 2. 100-500 H.P.
  - 3. 500-1000 H.P.
  - 4. Over 1000 H.P.
- BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 43, Pa. 4
- THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois 1-2
- CATERPILLAR TRACTOR CO., Peoria 8, Ill. 1-3
- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y. 1-2-3-4
- CUMMINS ENGINE CO., INC., Columbus, Ind. 1-2-3
- GENERAL MOTORS CORP., DETROIT DIESEL ENGINE DIV., 13400 W. Outer Drive, Detroit 28, Mich. 1-2-3
- HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wis. 1
- KOEHRING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wis. 1-2-3
- LINK-BELT SPEEDER CORP., 1201 Sixth St., S.W., Cedar Rapids, Iowa 1-2-3
- LITTLE GIANT CRANE & SHOVEL, INC., East 16th & Howard Drive, Des Moines 13, Iowa 1-2-3
- MANITOWOC ENGINEERING CORP., 16th & River Sts., Manitowoc, Wis. 1-3
- MARION POWER SHOVEL CO., 617 W. Conter St., Marion, Ohio 1-2-3
- NORTHWEST ENGINEERING CO., 135 S. LaSalle St., Chicago 3, Ill. 1-2-3
- OSGOOD-GENERAL, P.O. Box 515, (Osgood & Cheney Ave.), Marion, Ohio 1-2-3
- SCHIEFL BANTAM CO., Park St., Waverly, Iowa 1-2-3
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1-2-3
- DRAGLINES, Truck Mounted**
- AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.
- BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio
- BAY CITY SHOVELS, INC., Bay City, Michigan
- BUCYRUS-ERIE CO., South Milwaukee, Wis. 1-2-3
- CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIV., Springfield Place, Battle Creek 60, Mich. 1-3
- GAR WOOD INDUSTRIES, INC., Findlay, Ohio 3
- INSLY MFG. CO., 801 N. Olney St., Indianapolis 6, Ind. 1-2-3
- KÖHLING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wis. 1-2-3
- LINK-BELT SPEEDER CORP., 1201 Sixth St., S.W., Cedar Rapids, Iowa 1-2-3
- LITTLE GIANT CRANE & SHOVEL, INC., East 16th & Howard Drive, Des Moines 13, Iowa 1-2-3
- MANITOWOC ENGINEERING CORP., 16th & River Sts., Manitowoc, Wis. 1-3
- MARION POWER SHOVEL CO., 617 W. Conter St., Marion, Ohio 1-2-3
- NORTHWEST ENGINEERING CO., 135 S. LaSalle St., Chicago 3, Ill. 1-2-3
- OSGOOD-GENERAL, P.O. Box 515, (Osgood & Cheney Ave.), Marion, Ohio 1-2-3
- SCHIEFL BANTAM CO., Park St., Waverly, Iowa 1-2-3
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1-2-3
- DRAGLINES, Walking**
- 1. Diesel  
2. Electric  
3. Gasoline  
4. Electric Generator
- BUCYRUS-ERIE CO., South Milwaukee, Wis. 1-2-3-4
- HANSON CLUTCH & MACHINE CO., Tiffin, Ohio 1-3
- MARION POWER SHOVEL CO., 617 W. Conter St., Marion, Ohio 1-2-4
- PAGE ENGR. CO., Clearing Post Office, Chicago 38, Ill. 1-2
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1-2-3
- DRAGS, Sand (see Sand Recovery Machinery)**
- DREDGE HOISTS**
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- DREDGE PIPE AND FITTINGS**
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- DREDGE PIPE SLEEVES**
- THE AMERICAN RUBBER MANUFACTURING COMPANY, 1145 Park Avenue, Oakland 6, California
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.
- GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.
- RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willott St., Passaic, N.J.
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.
- DREDGE PUMPS (see Pumps, Dredge)**
- DREDGES, Sand & Gravel**
- 1. Bucket  
2. Ladder  
3. Pump
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill. 1-3
- BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY, Birdsboro, Penn. 3
- BOBINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif. 3
- DAVO CORP., Davo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa. 1-2-3
- EAGLE IRON WORKS, 127 Holcomb Ave., Des Moines 4, Iowa 2-3
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill. 2-3
- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y. 3
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1-2-3

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## DIRECTORY

- YUBA MFG. CO., 351 California St., San Francisco 4, Calif.  
1-2

### DRIFTERS

- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th Street, New York 17, N.Y.
- GARDNER-DENVER CO., Quincy, Ill.
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- THOR POWER TOOL CO., 175 N. State St., Aurora, Ill.
- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

### DRILL BITS (see Bits)

### DRILL STEEL

- BETHLEHEM STEEL CO., Third Street, Bethlehem, Pa.
- BRUNNER & LAY, INC., 9300 King Street, Franklin Park, Ill.
- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.
- GARDNER-DENVER CO., Quincy, Ill.
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- SCHRAMM, INC., West Chester, Pa.

### DRILLING ACCESSORIES

- BRUNNER & LAY, INC., 9300 King Street, Franklin Park, Illinois
- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- SPRAGUE & HENWOOD, INC., 221 W. Olive St., Scranton 2, Pa.
- SANDERSON-CYCLONE DRILL CO., 157 S. Main St., Orrville, Ohio
- SPANG & COMPANY, Butler, Pa.
- STRAUB MFG. CO., INC., 307 Chestnut St., Oakland 20, Calif.
- SUPERIOR PNEUMATIC & MFG. CO., INC., 4738 Warner Road, Cleveland 25, Ohio

### DRILLS, Core

- CARDOX CORP., 307 N. Michigan Ave., Chicago 1, Illinois
- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.
- HOFFMAN BROS. DRILLING CO., 120 E. Mahoning St., Punxsutawney, Pa.
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.
- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.
- PENNSYLVANIA DRILLING CO., 1201 Chartiers Ave., Pittsburgh 20, Pa.
- SPRAGUE & HENWOOD, INC., 221 W. Olive St., Scranton 2, Pa.

### DRILLS, Rock

- 1. Electric  
2. Gasoline  
3. Pneumatic  
4. Jet Piercing
- CARDOX CORP., 307 N. Michigan Ave., Chicago 1, Illinois  
1-2
- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.  
1-3-3
- COPCO PACIFIC CO., 930 Britton Ave., San Carlos, Calif.  
4
- EUGENE ENGINEERING CO., 1485 West 1st St., Eugene, Ore.  
1-2
- GARDNER-DENVER CO., Quincy, Ill.  
3
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.  
3

- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
3

- LEROI COMPANY, 1706 S. 68th St., Milwaukee 14, Wis.  
3

- THE SALEM TOOL CO., 767 S. Ellsworth Ave., Salem, Ohio  
1-2

- SANDERSON-CYCLONE DRILL CO., 157 S. Main St., Orrville, Ohio  
1-2

- SCHRAMM, INC., West Chester, Pa.  
3

- SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa.  
1-2

- THOR POWER TOOL CO., 175 N. State St., Aurora, Ill.  
3

- THE TRAVEL DRILL CO., 218 Bryan Bldg., P.O. Box 1124, Raleigh, No. Car.  
3

- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.  
3

### DRILLS, Stopper

- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

- GARDNER-DENVER CO., Quincy, Ill.

- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

- LEROI COMPANY, 1706 S. 68th St., Milwaukee 14, Wis.

- THOR POWER TOOL CO., 175 N. State St., Aurora, Ill.

- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

### DRILLS, Well or Blast-Hole

- BUCYRUS-ERIE CO., South Milwaukee, Wis.

- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.

- GARDNER-DENVER CO., Quincy, Ill.

- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

- JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

- LEROI CO., 1706 S. 68th St., Milwaukee 14, Wis.

- E. J. LONGYEAR CO., 1700 Foothay Tower, Minneapolis 2, Minn.

- LOOMIS MACHINE CO., Tiffin, Ohio

- SANDERSON CYCLONE DRILL CO., 157 S. Main St., Orrville, Ohio

- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

### DRIVES

- 1. Chain

- 2. Flat Belt

- 3. Flexible Shaft

- 4. Gear

- 5. Shaft Center

- 6. Variable Speed

- 7. V-Belt

- AJAX FLEXIBLE COUPLING CO., INC., Westfield, N.Y.  
3

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 7, Wis.  
4-5-6-7

- AMERICAN FLEXIBLE COUPLING, Pittsburgh Ave., Erie, Pa.  
3

- THE AMERICAN PULLEY CO., 4200 Wissahickon Ave., Philadelphia 29, Pa.  
2-4-5-6-7

- BARBER-GREENE COMPANY, 400 N. Highland Avenue, Aurora, Ill.  
1-4

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.  
1-3

- BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY, Birdsboro, Penn.  
2-4-6-7

• A dot before name indicates ROCK PRODUCTS Advertiser

- THE CLEVELAND WORM AND GEAR COMPANY, 3249 East 80th Street, Cleveland 4, Ohio  
1-2-3-4-5-6-7

- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.  
3-4-7

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 48, Calif.  
1

- DIAMOND CHAIN CO., INC., 402 Kentucky Ave., Indianapolis 7, Ind.  
1-3

- DODGE MFG. CORP., 500 S. Union St., Mishawaka, Ind.  
1-2-3-4-5-6-7

- DYNAMIC CORP., 3307 14th Ave., Kenosha, Wis.  
6

- F. A. B. MANUFACTURING CO., 1249 67th St., Oakland, Calif.  
3

- THE FALK CORP., 3001 W. Canal St., Milwaukee 8, Wis.  
3-4

- FARREL-BACON, Ansonia, Conn.  
4

- HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.  
1-4

- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
6

- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
1-3-4

- W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill.  
3-4-7

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.  
1-2-3-4-5-6-7

- THE LIMA ELECTRIC MOTOR CO., 4300 Findlay Road, Lima, Ohio  
4-6

- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.  
1-3-4-5-6-7

- R. E. LOVEKIN CORP., Schoff Bldg., 15th & Race Sts., Philadelphia 2, Pa.  
5-6

- PHILADELPHIA GEAR WORKS, INC., G St. below Erie Ave., Philadelphia 34, Pa.  
4

- RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., Parsippany, N.J.  
7

- REEVES PULLEY CO., INC., 1225 Seventh St., Columbus, Ind.  
6

- SMITH ENGINEERING WORKS, 500 E. Capitol Dr., Milwaukee 12, Wis.  
1-2-3-4-5-6-7

- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.  
1-4-7

- STERLING ELECTRIC MOTORS INC., 8401 Telegraph Rd., Los Angeles 22, Calif.  
6

- TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill.  
1

- TRUXA MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.  
1

- U.S. ELECTRICAL MOTORS, INC., 200 E. Slauson Ave., Los Angeles 54, Calif.  
4-6

- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.  
2-7

- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio  
3

- T. B. WOODS SONS CO., 5th Ave., Chambersburg, Pa.  
2-4-6-7

### DROP BALLS

- BIRDSBORO STEEL FOUNDRY & MACHINE COMPANY, Birdsboro, Penn.

- CAPE ANN ANCHOR & FORGE CO., Whittemore St., Gloucester, Mass.

- DIAMOND IRON WORKS, DIV. GOODMAN MANUFACTURING CO., 1728 N. 2nd St., Minneapolis 11, Minn.

- EAGLE IRON WORKS, 127 Helcomb Ave., Des Moines 4, Iowa  
W. Third St., Pittsburg, Kan.

### DRY PANS

- EAGLE IRON WORKS, 127 Helcomb Ave., Des Moines 4, Iowa

- MCANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa.

- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburg, Kan.

### DRYERS, Rotary, Gravel, Rock, Sand

- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.

- BETHLEHEM STEEL COMPANY, Third Street, Bethlehem, Penn.

- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

- DENVER EQUIPMENT CO., 1400 17th St., P. O. Box 5268, Denver 17, Colo.

- HARDINGE CO., INC., 240 Arch St., York, Pa.

- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.

- HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.

- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

- JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

- McANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa.

- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.

- NORTHWEST ENGINEERING CO., 135 S. La Salle St., Chicago 3, Ill.

- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave., N.E., Minneapolis 12, Minn.

- ROGERS IRON WORKS CO., Joplin, Mo.

- STANDARD STEEL CORP., 5036 Boyle Ave., Los Angeles 56, Calif.

- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

- TAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

- VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

- THE WEBB CORP., Webb City, Mo.

### DRYERS, Plaster Board

- THE DORN CO., Barry Place, Stamford, Conn.

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### DRYERS, Steam Coil

- W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.

- MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.

- SHORE ENGINEERING, 322 Broadway, New York 7, New York

- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### DUMPING MECHANISMS, Truck

- EASTON CAR & CONSTRUCTION CO., Easton, Pa.

## DIRECTORY

**THE GALION ALLSTEEL BODY CO.**,  
605 S. Market Street, Galion,  
Ohio

**GAR WOOD IND. INC.**, Wayne  
Div., Wayne, Mich.

**THE MARION METAL PROD. CO.**,  
Chester Avenue, Marion, Ohio  
**ST. PAUL HYDRAULIC HOIST**,  
2207 University Ave., Minneapolis  
14, Minn.

### DUST COLLECTING EQUIPMENT ACCESSORIES

**AMERICAN AIR FILTER CO., INC.**,  
215 Central Ave., Louisville 8, Ky.

**AMERICAN WHEELABRATOR &  
EQUIPMENT CORP.**, 1281 S. Bryn  
Mawr St., Mishawaka, Indiana

**CARLYLE RUBBER CO., INC.**, 48  
Park Place, New York 7, New  
York

**DRAGO CORP.**, Drago Bldg., Fifth  
& Liberty Aves., Pittsburgh 22, Pa.  
**DUSTEX CORP.**, 42-27 Franklin  
Lewis Blvd., Buffalo, N.Y.

• **IOWA MFG. CO.**, 916-16th St.  
N.E., Cedar Rapids, Iowa

• **THE JOHNSON-MARCH CORP.**,  
1724 Chestnut St., Philadelphia 3,  
Pa.

• **KENNEDY-VAN SAUN MFG. &  
ENG. CORP.**, 2 Park Ave., New  
York 16, N.Y.

• **THE KIRK & BLUM MFG. CO.**,  
3120 Ferrier St., Cincinnati 9, Ohio

• **THE NORTHERN BLOWER CO.**,  
6409 Barberon Ave., Cleveland  
2, Ohio

• **PANGORN CORP.**, Hagerstown,  
Md.

• **THE W. W. SLY MFG. CO.**, 4700  
Train Ave., Cleveland 2, Ohio  
1-2

• **STANDARD STEEL CORP.**, 8036  
Beale Ave., Los Angeles 38, Calif.

### DUST COLLECTORS

- 1. Bag Type
- 2. Cyclone
- 3. Electric Precipitators
- 4. Hydrotic
- 5. Portable

• **ALLIS-CHALMERS MFG. CO.**, 975  
So. 70th St., Milwaukee 1, Wis.  
1

**AMERICAN AIR FILTER CO., INC.**,  
215 Central Ave., Louisville 8,  
Ky.  
1-2-3-4-5

**AMERICAN WHEELABRATOR &  
EQUIPMENT CORP.**, 1281 S. Bryn  
Mawr St., Mishawaka, Indiana  
1

• **BUELL ENGINEERING CO.**, 70 Pine  
Street, New York 5, New York  
3-5

• **COMBUSTION ENGINEERING,  
INC., RAYMOND DIV.**, 1315 N.  
Brunch St., Chicago 32, Ill.  
3

• **FLY ASH ARRESTOR CORP.**, P.O.  
Box 1883, Birmingham, Ala.  
3-4

• **W. P. HEINEKEN, INC.**, 80 Broad  
St., New York 3, N.Y.  
3

• **IOWA MFG. CO.**, 916-16th St.  
N.E., Cedar Rapids, Iowa  
3-5

• **THE JOHNSON-MARCH CORP.**,  
1724 Chestnut St., Philadelphia 3,  
Pa.  
1-2-4-5

• **KENNEDY-VAN SAUN MFG. &  
ENG. CORP.**, 2 Park Ave., New  
York 16, N.Y.  
1-2-3-4-5

• **THE KIRK & BLUM MFG. CO.**,  
3120 Ferrier St., Cincinnati 9, Ohio  
3-5

• **THE NORTHERN BLOWER CO.**,  
6409 Barberon Ave., Cleveland  
2, Ohio  
1-2-3-4-5

• **PANGORN CORP.**, Hagerstown,  
Md.  
1-2-3

• **REES BLOW PIPE MFG. CO.**, 340  
Seventh St., San Francisco 3,  
Calif.  
1-2

**RESEARCH CORP.**, Bound Brook,  
N.J.  
3

• **SINTERING MACHINERY CORP.**,  
Netcong, N.J.  
1

• **THE W. W. SLY MFG. CO.**, 4700  
Train Ave., Cleveland 2, Ohio  
1-2

• **SPROUT WALDRON & CO., INC.**,  
Muncy, Pa.  
2

• **RICHARD F. WALSH CO.**, 30  
Church St., New York, N.Y.  
1-2

• **TURNER & HAWS ENGINEERING  
CO., INC.**, 87 Gardner St., West  
Roxbury 15, Mass.  
1-2-3

• **WESTERN PRECIPITATION CORP.**,  
1016 W. Ninth St., Los Angeles  
15, Calif.  
1-2-3

• **WILLIAMS PATENT CRUSHER &  
PULVERIZER CO., INC.**, 813 Mont-  
gomery St., St. Louis 6, Mo.  
1-2

### DUST COLLECTORS, Rock Drill

**AMERICAN AIR FILTER CO., INC.**,  
215 Central Ave., Louisville 8,  
Ky.

• **BUELL ENGINEERING COMPANY,  
INC.**, 70 Pine Street, New York  
5, New York

• **FLY ASH ARRESTOR CORP.**, P.O.  
Box 1883, Birmingham, Ala.

• **JOHNSON-MARCH CORP.**, 1724  
Chestnut St., Philadelphia, Pa.

• **MINE SAFETY APPLIANCES CO.**,  
201 N. Braddock Ave., Pittsburgh  
8, Pa.

• **THE NORTHERN BLOWER CO.**,  
6409 Barberon Ave., Cleveland  
2, Ohio

• **TURNER & HAWS ENGINEERING  
CO., INC.**, 87 Gardner St., West  
Roxbury 32, Mass.

### DUST CONTROL

• **AQUADYNE CORP.**, 441 Lexington  
Ave., New York 17, N.Y.

### DUST SAMPLING AND ANALYZING EQUIPMENT

• **BUELL ENGINEERING COMPANY,  
INC.**, 70 Pine Street, New York  
5, New York

• **MINE SAFETY APPLIANCES CO.**,  
201 N. Braddock Ave., Pittsburgh  
8, Pa.

• **WESTERN PRECIPITATION CORP.**,  
1016 W. Ninth St., Los Angeles  
15, Calif.

### DYNAMITE AND BLASTING EXPLOSIVES (see Explosives and Dynamite)

### E

### EARTH MOVING HAULAGE EQUIPMENT, Self Loading

• **ALLIS-CHALMERS MFG. CO.**, 975  
South 70th Street, Milwaukee 1, Wisconsin

• **ALLIS-CHALMERS MFG. CO.**, Tractor  
Division, Milwaukee 1, Wisconsin

• **CATERPILLAR TRACTOR CO.**, Peoria  
8, Ill.

• **EASTON CAR & CONSTRUCTION  
CO.**, Easton, Pa.

• **THE EUCLID ROAD MACHINERY  
CO.**, 1361 Chardon Road, Cleve-  
land 17, Ohio

• **GAR WOOD INDUSTRIES, INC.**,  
Findlay, Ohio

• A dot before name indicates ROCK PRODUCTS Advertiser

**GLEDHILLROAD MACHINERY CO.**,  
Gallen, Ohio

• **THE HEIL COMPANY**, 3000 W.  
Montana St., Milwaukee 1, Wis.

• **INTERNATIONAL HARVESTER CO.**,  
180 N. Michigan Ave., Chicago 1,  
III.

• **LE TOURNEAU-WESTINGHOUSE  
CO.**, 2201 N. Adams St., Peoria  
3, Ill.

• **SAUERMAN BROS. INC.**, 530 S.  
Clinton St., Chicago 7, Ill.

• **RICHARD P. WALSH CO.**, 30  
Church St., New York, N.Y.

• **WOOLDRIDGE MFG. CO.**, Handy  
Ave., Sunnyvale, Calif.

### ECONOMIZERS, Waste Heat (see Boilers, Waste Heat)

### ELECTRIC DETECTORS & SEPARATORS

**RADIO CORP. OF AMERICA**, En-  
gineering Products Dept., Front &  
Cooper Sts., Camden 2, N.J.

### ELECTRIC MOTORS

• **ALLIS-CHALMERS MFG. CO.**, 975  
So. 70th St., Milwaukee 1, Wis.

• **ELECTRIC MACHINERY MFG. CO.**,  
800 Central Avenue, Minneapolis  
13, Minn.

• **GENERAL DYNAMICS CORP.**,  
ELECTRO DYNAMIC DIV., 162  
Ave. A, Bayonne, N.J.

• **GENERAL ELECTRIC CO.**, 1 River  
Road, Schenectady 5, N.Y.

• **THE LIMA ELECTRIC MOTOR CO.**,  
4300 Findley Road, Lima, Ohio

• **STERLING ELECTRIC MOTORS,  
INC.**, 5401 Telegraph Rd., Los Angeles  
22, Calif.

• **U. S. ELECTRICAL MOTORS, INC.**,  
200 E. 8th Street, Los Angeles  
34, Calif.

• **WESTINGHOUSE ELECTRIC CORP.**,  
Gateway Bldg., Pittsburgh 30, Pa.

### ELECTRIC SWITCH GEAR

• **ALLIS-CHALMERS MFG. CO.**, 975  
So. 70th St., Milwaukee 1, Wis.

• **ELECTRIC MACHINERY MFG. CO.**,  
800 Central Avenue, Minneapolis  
13, Minn.

• **GENERAL ELECTRIC CO.**, 1 River  
Road, Schenectady 5, N.Y.

• **WESTINGHOUSE ELECTRIC CORP.**,  
Gateway Bldg., Pittsburgh 30, Pa.

### ELECTRIC TRANSFORMERS

• **ALLIS-CHALMERS MFG. CO.**, 975  
So. 70th St., Milwaukee 1, Wis.

• **GENERAL ELECTRIC CO.**, 1 River  
Road, Schenectady 5, N.Y.

F. R. HANNON & SONS, 1605  
Waynesburg Road S.E., Canton 7,  
Ohio

• **WESTINGHOUSE ELECTRIC CORP.**,  
Gateway Bldg., Pittsburgh 30, Pa.

### ELECTRIC EQUIPMENT AND SUPPLIES

• **GENERAL ELECTRIC CO.**, 1 River  
Road, Schenectady 5, N.Y.

• **WESTINGHOUSE ELECTRIC CORP.**,  
Gateway Bldg., Pittsburgh 30, Pa.

### ELECTRODES, WELDING

(see Welding Rods and  
Electrodes)

### ELEVATORS, Chain or Belt & Bucket

**ANCHOR CONCRETE MACHINERY  
CO.**, 1191 Fairview Ave., Columbus  
12, Ohio

• **BALDWIN-LIMA-HAMILTON  
CORP.**, Construction Equipment  
Div., South Main St., Lima, Ohio

• **BAUDHMAN MFG. CO., INC.**,  
Shipman Road, Jerseyville, Ill.

**BEAUMONT BIRCH CO.**, 1505 Race  
St., Philadelphia 2, Pa.

• **BODINSON MFG. CO.**, 2401 Bay-  
shore Blvd., San Francisco 24,  
Calif.

• **BONDED SCALE AND MACHINE  
CO.**, 2193 S. Third St., Columbus  
7, Ohio

• **L. BURMEISTER CO.**, 4333 W.  
Mitchell St., Milwaukee 14, Wis.

• **BUTLER BIN CO.**, 945 Blackstone  
Ave., Waukesha, Wis.

• **CHAIN BELT COMPANY**, 4649 W.  
Greenfield Ave., Milwaukee 1,  
Wis.

• **CONCRETE TRANSPORT MIXER  
CO.**, 4987 Flyer Ave., St. Louis 9,  
Mo.

• **CONTINENTAL QIN CO.**, 4500 5th  
Ave. S., Birmingham, Ala.

• **DIAMOND IRON WORKS, DIV.  
GOODMAN MFG. CO.**, 1728 North  
2nd St., Minneapolis 11, Minn.

• **EAGLE CRUSHER CO., INC.**, 900  
Harding Way East, Gallatin, Ohio

• **THE FAIRFIELD ENGINEERING  
CO.**, 324 Bernhart St., Marion,  
Ohio

• **FANNING SCHUETZ ENGINEERING  
CO.**, 4325 N. Third Street, Philadel-  
phia 40, Pa.

• **FLEMING MFG. CO.**, Dept. C,  
Fleming Ave., Cuba, Mo.

• **GRUENDLER CRUSHER & PULV.  
CO.**, 2915 N. Market St., St.  
Louis 6, Mo.

• **HEWITT-ROBINS, INC.**, 666 Glen-  
brook Road, Stamford, Conn.

• **IOWA MFG. CO.**, 916-16th St.  
N.E., Cedar Rapids, Iowa

• **THE JEFFREY MFG. CO.**, 935 N.  
Fourth St., Columbus 16, Ohio

• **C. S. JOHNSON CO.**, P. O. Box  
71, Champaign, Ill.

• **JOHNSON & HOENLER, INC.**, P.O.  
Box 102, Lansdowne, Pa.

• **THE KENT MACHINE CO.**, Cuya-  
hoga Falls, Ohio

• **KENNEDY-VAN SAUN MFG. &  
ENG. CORP.**, 2 Park Ave., New  
York 16, N.Y.

• **LANDIS STEEL CO.**, 116 West A  
St., P. O. Box 248, Picher, Okla.

• **LINK-BELT COMPANY**, 307 N.  
Michigan Ave., Chicago 1, Ill.

• **LIPPmann ENGINEERING WORKS**,  
4603 W. Mitchell St., Milwaukee  
14, Wis.

E. F. MARSH INGR. CO., 4324  
W. Clayton Ave., St. Louis 10, Mo.

• **MECKUM ENGINEERING, INC.**,  
Dayton Rd., Ottawa, Ill.

• **MATERIAL HANDLING INC.**, 4985  
Flyer Ave., St. Louis 9, Mo.

• **MCLANAHAN & STONE CORP.**,  
Wall & Jackson Sts., Hollidays-  
burg, Pa.

• **PIONEER ENGINEERING WORKS,  
INC.**, 1515 Central Ave. N.E.,  
Minneapolis 13, Minn.

• **REES BLOW PIPE MFG. CO.**, 340  
Seventh St., San Francisco 3,  
Calif.

• **ROGERS IRON WORKS CO.**, Jopp-  
lin, Mo.

• **SMITH ENGINEERING WORKS**, 333  
East Capitol Dr., Milwaukee 12,  
Wis.

• **SPROUT WALDRON & CO., INC.**,  
Muncy, Pa.

• **STEPHENS-ADAMSON MFG. CO.**,  
Ridgeway Ave., Aurora, Ill.

• **STRAUB MFG. CO., INC.**, 307  
Chestnut St., Oakland 20, Calif.

• **STURTEVANT MILL COMPANY**,  
102 Clayton St., Dorchester, Bos-  
ton 22, Mass.

• **TRIANGLE ENGINEERING CO.**,  
2948 W. 26th St., Chicago 23, Ill.

• **UNIVERSAL ENGINEERING CORP.**,  
625 C Ave. N.W., Cedar Rapids,  
Iowa

• **UNITED STATES RUBBER CO.**,  
1230 Ave. of the Americas, New  
York 20, N.Y.

• **UNIVERSAL ROAD MACHINERY  
CO.**, 37 Emrick St., Kingston,  
N.Y.

• **WEBSTER MFG. CO.**, West Hall  
St., Tiffin, Ohio

## DIRECTORY

- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.
- WITTEMAN MACHINERY CO., Farmington, N.J.

### ELEVATORS, Bulk Cement

- AMERICAN HOIST AND DERRICK COMPANY, 63 South Robert St., St. Paul 1, Minnesota

- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio

- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

- BEAUMONT BIRCH CO., 1505 Race St., Philadelphia 2, Pa.

- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

- L. BURMEISTER CO., 4535 W. Mitchell St., Milwaukee 14, Wis.

- BUTLER BIN CO., 945 Blockstone Ave., Waukesha, Wis.

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.

- C. S. JOHNSON CO., P.O. Box 71, Champaign, Ill.

- JEFFREY MANUFACTURING CO., 925 North 4th St., Columbus 16, Ohio

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

- LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.

- LIPPmann ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

- MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.

- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.

- TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill.

- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### ELEVATORS, Portable (see Loaders, Truck)

### ENGINEERING SERVICE, Consulting and Designing

- W. B. BENDY CEMENT ENGINEERS, 9403 Riverview Drive, St. Louis 15, Mo.

- THE DORR CO. ENGRS., Barry Plaza, Stamford, Conn.

- THE FAIRFIELD ENGINEERING CO., 334 Barnhart St., Marion, Ohio

- GRUENDLER CRUSHER & PULV. CO., 2915 W. Market St., St. Louis 6, Mo.

- HAMMERMILLS, INC., (Subsidiary of PETTIBONE MULLIKIN CORP.), 4700 W. Division St., Chicago 40, Ill.

- E. LEE HEIDENREICH, JR., 75 Second St., Newark, N.J.

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- LIPPmann ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

- MACDONALD ENGR. CO., 188 W. Randolph St., Chicago 1, Ill.

- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

- McLANAHAN & STONE CORP., Well & Jackson Sts., Hollidaysburg, Pa.

- MILLER EQUIPMENT CO., INC., P. O. Box 1564, Salisbury, Md. Cor.

- M & M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.

- NICHOLS ENGINEERING & RESEARCH CORP., 70 Pine St., New York 5, N.Y.

- SAUERMAN BROS. INC., 530 S. Clinton St., Chicago 7, Ill.

- SHORE ENGINEERING, 322 Broadway, New York 7, New York

- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

- SMITH ENGINEERING WORKS, 533 East Capitol Dr., Milwaukee 12, Wis.

- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

### ENGINES, Diesel (see Diesel Engines)

#### ENGINES

- 1. Gasoline

- 2. Kerosene

- 3. Marine

- 4. Natural Gas or L.P.G.

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

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- ALLIS-CHALMERS MFG. CO., Tractor Division, Milwaukee 1, Wis.

1

- THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois

1—2—3—4

- J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin

1—4

- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.

4

- MARINE & INDUSTRIAL ENGINE DIV., CHRYSLER CORPORATION, 2000 Van Horn Road—P.O. Drawer W, Trenton, Michigan

1—3—4

- CUMMINS ENGINE CO., INC., Columbus, Ind.

3—4

- FORD MOTOR CO., Industrial Engine Dept., 15050 Woodward Ave., P.O. Box 3581, Highland Park 3, Mich.

1

- DETROIT DIESEL ENGINE DIV., GENERAL MOTORS CORP., 13400 W. Outer Dr., Detroit 26, Mich.

3

- A. C. HORN CO. INC., 18th St. & 44th Ave., Long Island City 1, N.Y.

- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

1—2—3—4

- LEROI COMPANY, 1706 S. 68th St., Milwaukee 14, Wis.

1—4

- THE NATIONAL SUPPLY CO., Engine Div., 1401 Sheridan Ave., Springfield, Ohio

3—4

- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.

3—4

- D. W. ONAN & SONS, INC., University Ave. S.E., of 25th, Minneapolis 14, Minn.

1—3—4

- REO MOTORS, INC., INDUSTRIAL & MARINE ENGINE DIV., Lansing, Mich.

1

- SCHRAMM, INC., West Chester, Pa.

1

### ENTRAINED AIR INDICATORS

- DEWEY AND ALMY CHEMICAL CO., 62 Whittemore Ave., Cambridge, Mass.

- A. C. HORN CO. INC., 18th St. & 44th Ave., Long Island City 1, N.Y.

- HUMBOLDT MFG. CO., 2014 N. Whipple St., Chicago 47, Ill.

- EXCAVATORS, Cableway Dragline (see Cable Excavators)

- NICHOLS ENGINEERING & RESEARCH CORP., 70 Pine St., New York 5, N.Y.

- EXCAVATORS, Clamshell (see Cranes)

- EXCAVATORS, Scraper (see Cable Excavators)

- EXCAVATORS, Tower (see Cableways)

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- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

- AMERICAN AIR FILTER CO., INC., 215 Central Ave., Louisville 8, Ky.

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- THE KIRK & BLUM MFG. CO., 3120 Forrer St., Cincinnati 9, Ohio

- THE NORTHERN BLOWER CO., 6409 Barberston Ave., Cleveland 2, Ohio

- REES BLOW PIPE MFG. CO., 340 Seventh St., San Francisco 3, Calif.

- SEVENITE BLOWING CO., 1000 12th St., San Francisco 3, Calif.

- THE THERMOPOWER CO., 1000 12th St., San Francisco 3, Calif.

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## DIRECTORY

- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.
- HAMMERMILLS, INC., (Subsidiary of PITTIBONE MULLIKEN CORP.), 4700 W. Division St., Chicago 40, Ill.
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- HEWITT-ROBINS, INC., 686 Glenbrook Road, Stamford, Conn.
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- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
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- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.
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6-7-8-9-10
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- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
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- MERRICK SCALE MFG. CO., 180 Autumn St., Passaic, N.J.
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- MILLER EQUIPMENT CO., INC., P. O. Box 1566, Salisbury, Md.
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- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.
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- PIONEER ENGINEERING WORKS, INC., 1315 Central Ave. N.E., Minneapolis 13, Minn.
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- ROGERS IRON WORKS CO., Joplin, Mo.
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- ROSS SCREEN & FRIEDR. CO., 19 Rector St., New York 6, N.Y.
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- SCHAFER POIDOMETER CO., 3828 Smallman St., Pittsburgh 22, Pa.
- 6-9
- SIMPLICITY ENGINEERING CO., 213 W. Oak St., Dundee, Mich.
- 10
- SINTERING MACHINERY CORP., Netcong, N.J.
- 8-9
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- 1-3-5-6-7
- SMITH ENGINEERING WORKS, 532 East Capitol Dr., Milwaukee 12, Wis.
- 1
- SPROUT WALDRON & CO., INC., Munsey, Pa.
- 4
- STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.
- 1-2-3-4-5-6-7-8-9-10
- STRAUSS MFG. CO., INC., 307 Chestnut St., Oakland 20, Calif.
- 3-4-5-7
- ST. REGIS PAPER CO., 230 Park Ave., New York 17, N.Y.
- 4-5-9
- SYNTROM COMPANY, 430 Lexington Ave., Homer City, Pa.
- 3-4-10
- TAYLOR ENGINEERING & MFG. CO., Allentown, Pa.
- 1-5
- TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill.
- 3-4
- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa
- 1-3
- UNIVERSAL ROAD MACHINERY CO., 27 Emeric St., Kingston, N.Y.
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- VIBRO-PLUS PRODUCTS, INC., 34-11 Queens Blvd., Woodside 77, N.Y.
- 10
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.
- 1
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio
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- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.
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- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.
- 1-3
- FIFTH WHEEL, Heavy Duty, Special**
- AMERICAN STEEL FOUNDRIES, 400-410 N. Michigan Ave., Chicago 11, Ill.
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- FLEXIBLE COUPLINGS (see Drives)**
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- DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- HENDRICK MFG. CO., 39 Dundoff St., Carbondale, Pa.
- UNITED STATES STEEL CORP., 825 William Penn Place, Pittsburgh 30, Pa.
- FLOORING SYSTEMS, Concrete (see Concrete Specialty Forms)**
- FLOTATION EQUIPMENT**
- DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 5268, Denver 17, Colo.
- THE GALIGHER CO., 348 W. 8th South St., Salt Lake City 4, Utah
- GENERAL AMERICAN TRANSPORTATION CORP., 135 S. LaSalle St., Chicago 90, Ill.
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- LOUISVILLE DRYING MACHINE CO., Louisville, Ky.
- MECKUM ENGINEERING, INC., Dayton Road, Ottawa, Ill.
- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- THE STEARNS-ROGER MFG. CO., 1720 California St., Denver 2, Colo.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.
- FLOTATION REAGENTS & SUPPLIES**
- AMERICAN CYANAMID COMPANY, 30 Rockefeller Plaza, New York 20, New York
- ARMOUR & COMPANY, 1355 W. 31st St., Chicago 9, Ill.
- DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 5268, Denver 17, Colo.
- HERCULES POWDER CO., 946 King St., Wilmington 99, Dela.
- FROGS AND SWITCHES, Railway**
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.
- THE FROG, SWITCH & MFG. CO., Carlisle, Pa.
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- GAS ANALYZERS AND RECORDERS**
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- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- GAS PRODUCERS**
- WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio
- GATES (see Bin Gates and Chutes)**
- GEAR-MOTORS**
- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- THE FALK CORP., 3001 W. Canal St., Milwaukee 8, Wis.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 3, N.Y.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- R. E. LOVEKIN CORP., Schaff Bldg., 13th & Race Sts., Philadelphia 2, Pa.
- STERLING ELECTRIC MOTORS, INC., 5401 Telegraph Rd., Los Angeles 22, Calif.
- U.S. ELECTRICAL MOTORS, INC., 200 E. 8th St., Los Angeles 54, Calif.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.
- GEAR REDUCERS (see Drivers)**
- GEARS**
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 289 E. 14th St., Chicago Heights, Ill.
- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
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- FARREL-BACON, Ansonia, Conn.
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- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
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- STROH PROCESS STEEL CO., 1428 High St. N. S., Pittsburgh 12, Pa.
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- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.
- VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio
- GENERATOR SETS, Electric**
- 1. Diesel Engine  
2. Gasoline Engine  
3. Electric Motor  
4. Turbine
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.
- 3-4
- THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois
- 1-2
- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- 1
- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.
- 1
- CUMMINS ENGINE CO., INC., Columbus, Ind.
- 1
- ELECTRIC MACHINERY MFG. CO., 800 Central Avenue, Minneapolis 13, Minn.
- 3
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 3, N.Y.
- 1-2-3-4
- GENERAL MOTORS CORP., DETROIT DIESEL ENGINE DIV., 13400 W. Outer Drive, Detroit 28, Mich.
- 1
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- 1-2
- LEROI COMPANY, 1706 S. 68th St., Milwaukee 14, Wis.
- 2
- MURPHY DIESEL CO., 5317 West Burnham St., Milwaukee 14, Wis.
- 1
- THE NATIONAL SUPPLY CO., ENGINE DIV., 1401 Sheridan Ave., Springfield, Ohio
- 1

● A dot before name indicates ROCK PRODUCTS Advertiser

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DEWEY AND ALMY CHEMICAL CO., 62 Whittemore Ave., Cambridge 40, Mass.

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ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

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DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 3268, Denver 17, Colo.

FREDERIC IRON & STEEL INC., 701 W. St., Fredrick, Md.

HARDINGE CO., INC., 240 Arch St., York, Pa.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Avenue, New York 16, N.Y.

SHEFFIELD STEEL CORP., Sheffield Station, Kansas City 3, Mo.

F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

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HARDINGE CO., INC., 240 Arch St., York, Pa.

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F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

### GRINDING PEBBLES (see Grinding Media)

### GRIZZLIES (see Screens)

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A & A MFG. CO., 2017 W. Clyburn St., Milwaukee 3, Wis.

ROBINSON MFG. CO., 3401 Bayshore Blvd., San Francisco 24, Calif.

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THE KIRK & BLUM MFG. CO., 3129 Former St., Cincinnati 9, Ohio

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THE STANDARD METAL MFG. CO., 110 Center St., Malinta, Ohio

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REMINGTON ARMS CO., INC., 939 Barnum Ave., Bridgeport 2, Conn.

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### GYPSUM PLANT MACHINERY

W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

McLAHAN & STONE CORP., Wall & Jackson Sts., Hellidzburg, Pa.

F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.

SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 58, Calif.

STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.

UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### GYPSUM PLANTS, Engineers, Contractors

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.

### H

### HAMMERMILLS (see Crushers, Hammer)

### HARDENERS, Concrete

A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.

THE MASTERS BUILDERS CO., 7016 Euclid Ave., Cleveland 3, Ohio

THE RESISTO-LOY COMPANY, Grand Rapids 7, Mich.

SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 Broadway, N. New York 6, N.Y.

### HARD SURFACING METALS (see Welding Rods, Hard Facing)

### HEAT EXCHANGERS

CLEAVER-BROOKS CO., 326 E. Keefe Ave., Milwaukee 12, Wis.

COEN CO., 40 Beardman Place, San Francisco, Calif.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

• A dot before name indicates ROCK PRODUCTS Advertiser

WESTERN PRECIPITATION CORP., 1016 W. Ninth St., Los Angeles 15, Calif.

### HEAT TREATING MACHINES, Drill Steel

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

### HEATERS, Concrete Mixer

COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

HAUCK MANUFACTURING COMPANY, 124-136 Tenth Street, Brooklyn 15, New York

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

LITTLEFORD BROS., INC., 483 E. Pearl St., Cincinnati 2, Ohio

STORM, INC., 845-92nd Ave., Oakland 3, Calif.

### HEATERS, Plant, Hot Air

AMERICAN AIR FILTER CO., INC., 215 Central Ave., Louisville 8, Ky.

CLEAVER-BROOKS CO., 326 E. Keefe Ave., Milwaukee 12, Wis.

DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.

JACKSON & CHURCH CO., 321 N. Hamilton St., Saginaw, Mich.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

PRAT-DANIEL CORP., 2 Meadow St., St. Norwalk, Conn.

### HEAVY-MEDIA SEPARATION PROCESS

AMERICAN CYANAMID CO., 30 Rockefeller Plaza, New York 20, New York

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

THE MINE & SMOLETER SUPPLY CO., 17th & Blake, Denver 17, Colo.

ORE & CHEMICAL COMPANY, 80 Broad St., New York, N.Y.

STEAMS MAGNETIC INC., 675 S. 28th St., Milwaukee 46, Wis.

WESTERN MACHINERY CO., 760 Polson St., San Francisco 7, Calif.

### HOISTS

AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

J. W. APPLEY & SON, INC., 831 9th Street North, St. Petersburg 2, Florida

CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

CLIPPER MFG. CO., 2800 Warwick, Kansas City 6, Mo.

CONVERTO MANUFACTURING CO., Cambridge City, Ind.

COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.

THE GALION ALLSTEEL BODY CO., 605 S. Market St., Galion, Ohio

GARDNER-DENVER CO., Quincy, Ill.

HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wis.

THE HEIL CO., 3000 W. Montana St., Milwaukee 1, Wis.

HERCULES STEEL PROD. CORP., Sherman Street, Galion, Ohio

INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

JEFFREY MANUFACTURING CO., 925 North 4th St., Columbus 16, Ohio

JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

M & M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.

O. K. MACHINERY DIV., JOHN C. MOTTER PRINTING PRESS CO., 600 Florence St., Columbia 1, Pa.

THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.

ROGERS IRON WORKS CO., Joplin, Mo.

SAUERMAN BROS., INC., 530 S. Clinton St., Chicago 7, Ill.

THE STEARNS-ROGER MFG. CO., 1720 California St., Denver 2, Colo.

THOR POWER TOOL CO., 175 N. State St., Aurora, Ill.

VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

WHITING CORP., Harvey, Ill.

WRIGHT HOIST DIV., AMERICAN CHAIN & CABLE CO., INC., York, Pa.

THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Holdeman Ave., Philadelphia 15, Pa.

### HOPPERS, Aggregates, Cement, etc.

BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.

BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N.J.

IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.

MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### HOPPERS, Unloading Ready Mixed Concrete

BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### HOSE, Rubber

1. Hydraulic
2. Pneumatic
3. Oil
4. Sand

AERO-COUPING CORP., 3018 Winona Ave., Burbank, Calif.

1-2-3

AEROQUIP CORP., 300 S. East Ave., Jackson, Mich.

1-2-3

## DIRECTORY

• THE AMERICAN RUBBER MFG. CO., 1145 Park Avenue, Oakland 8, Calif.  
1-2-3-4

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.  
4

BOSTON WOVEN HOSE & RUBBER COMPANY, P. O. Box 1071, Boston 3, Massachusetts  
1-2-3-4

CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.  
1-2-3-4

CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.  
2

GATES RUBBER CO., 999 South Broadway, Denver 17, Colo.  
4

GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.  
1-2-3-4

B. F. GOODRICH CO., 200 South Main St., Akron 11, Ohio  
1-2-3-4

THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio  
1-2-3-4

HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.  
4

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.  
1-2-3-4

INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.  
2

JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
2

REPUBLIC RUBBER DIV., Lee Rubber & Tire Corp., Albert Street, Youngstown 1, Ohio  
1-2-3-4

LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.  
1-2-3-5

MARTIN ENGINEERING CO., 704 Rock Place, Kewanee, Ill.  
3

PANGORN CORP., Hagerstown, Md.  
6

PIONEER RUBBER MILLS, 353 Sacramento St., San Francisco 11, Calif.  
1-2-3-4

• QUAKER RUBBER CORP., DIV. OF H. K. PORTER CO., INC., OF PITTSBURGH, Tacoma & Comly Sts., Philadelphia 24, Pa.  
1-2-3-4

RAYBESTOS DIV., RAYBESTOS-MANHATTAN, INC., 78 E. Main St., Stratford, Conn.  
1-2-3-4

RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.  
1-2-3-4

RODERS HYDRAULIC, INC., 7401 Walker St., Minneapolis 16, Minn.  
1

• THERMOID CO., Trenton, N.J.  
1-2-3-4

• UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.  
1-2-3-4

### HOSE FITTINGS

AERO-CO尤LING CORP., 3018 Winona Ave., Burbank, Calif.  
AEROQUIP CORP., 300 E. 8th Ave., Jackson, Mich.

• AMERICAN FLEXIBLE COUPLING, Pittsburgh Ave., Erie, Pa.

• THE AMERICAN RUBBER MANUFACTURING COMPANY, 1145 Park Avenue, Oakland 8, California

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

BOSTON WOVEN HOSE & RUBBER COMPANY, P. O. Box 1071, Boston 3, Massachusetts

CARLYLE RUBBER CO., INC., 62 Park Place, New York 7, N.Y.

CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

DIXON VALVE & COUPLING CO., Hancock St. & Columbia Ave., Philadelphia 22, Pa.

HOSE ACCESSORIES CO., Lehigh Ave. of 17th St., Philadelphia 32, Pa.

INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.

PIONEER RUBBER MILLS, 353 Sacramento St., San Francisco 11, Calif.

• RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.

• THERMOID CO., Trenton, N.J.

• VICTOR EQUIPMENT CO., 844 Polson St., San Francisco 7, Calif.

• WORTHINGTON CORP., Se. 2nd St., Plainfield, N.J.

### HULLS, Dredge (see Dredges)

### HUMIDIFIERS, Laboratory (see Laboratory Apparatus)

### HYDRAULIC CYLINDERS

THE COMMERCIAL SHEARING & STAMPING CO., 1775 Logan Ave., P.O. Box 719, Youngstown 1, Ohio

THE GALION ALL STEEL BODY CO., 605 S. Market Street, Galion, Ohio

GAR WOOD IND. INC., Wayne Division, Wayne, Mich.

NATIONAL LIFT CO., 800 Lowell St., Ypsilanti, Mich.

ST. PAUL HYDRAULIC HOIST, 2207 University Ave., Minneapolis 14, Minn.

### HYDRATORS, Lime

• THE DODGE CO. ENGRS., Barry Place, Stamford, Conn.

• HARDINGE CO., INC., 240 Arch St., York, Pa.

W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.

• HORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.

• TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

• VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

HYDROSEPARATORS (see Sand Recovery Machinery)

### I

### IDLERS, Conveyor (see Conveyor Idlers)

### INDICATORS, Bin (see Bin Level Indicators)

### INSULATION, Heat (see Refractories)

### INSTRUMENTS, Process Control

ARNOLD O. BECKMAN, INC., 1030 Mission St., South Pasadena, Calif.

• A dot before name indicates ROCK PRODUCTS Advertiser

BROWN INSTRUMENT CO., Wayne & Roberts Ave., Philadelphia, Pa.

• THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

THE HAYS CORP., 742 East 8th St., Michigan City 21, Ind.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### J

### JACKS, Hydraulic

• THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois

RODGERS HYDRAULIC, INC., 7401 Walker St., Minneapolis 16, Minn.

### JIGS, Sand and Gravel

DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 3268, Denver 17, Colo.

JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio

MECKUM ENG. INC., Dayton Road, Ottawa, Ill.

STRAUB MFG. CO., INC., 507 Chestnut St., Oakland 20, Calif.

• CHARLES E. WOOD, 906 West Water St., Milwaukee, Wis.

• YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

### K

### KETTLES, Gypsum, Calcining

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

### KILN PARTS, ENDS, ETC.

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 23rd Ave., Portland 10, Ore.

• ELECTRO ALLOY DIV., AMERICAN BRAKE SHOE CO., Elyria, Ohio

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

• MOORE DRY KILN CO., Jacksonville 1, Fla.

RICHARD REMMIE SON CO., 3003 Nedley St., Philadelphia 37, Pa.

F. L. SMITH & CO., 11 West 42nd St., New York 34, N.Y.

• STANDARD DRY KILN CO., 798 South Harding, Indianapolis, Ind.

STROH PROCESS STEEL CO., 1428 High St. N. S., Pittsburgh 12, Pa.

UNIVERSAL DOOR CARRIER INC., 1117 Cornell Ave., Indianapolis 2, Ind.

### KILNS, Curing, Concrete

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

JACKSON & CHURCH CO., 321 N. Hamilton St., Saginaw, Mich.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, N.Y.

LITTLEFORD BROS., INC., 453 E. Pearl St., Cincinnati 2, Ohio

SHORE ENGINEERING, 322 Broadway, New York 7, New York

STORM, INC., 845-92nd Ave., Oakland 3, Calif.

• TRUAX MACHINE CO., 16 Michigan St., Seattle, Wash.

RICHARD P. WALSH CO., 30 Church St., New York, New York

### KILNS, Lime, Vertical

• THE ELLERMAN CO., 1210 Continental Bank Bldg., Salt Lake City 1, Utah

• HARDINGE CO., INC., 240 Arch St., York, Pa.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

NICHOLS ENGINEERING & RESEARCH CORP., 70 Pine St., New York 5, N.Y.

• VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

RICHARD P. WALSH CO., 30 Church St., New York, New York

### KILNS, Rotary, Cement, Gypsum, Lime

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

BETHLEHEM STEEL CO., Third Street, Bethlehem, Penn.

• HARDINGE CO., INC., 240 Arch St., York, Pa.

W. P. HEINEKEN, INC., 50 Broad St., New York 3, N.Y.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

• NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.

• THE SALEM TOOL CO., 767 S. Ellsworth Ave., Salem, Ohio

F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

• STANDARD STEEL CORP., 5036 Boyle Ave., Los Angeles 50, Calif.

R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

• TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

• VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.

RICHARD P. WALSH CO., 30 Church St., New York, New York

WEBB CORP., Webb City, Mo.

### KILN DOORS (Circle Curving Room Doors)

### I

### LABORATORY APPARATUS

#### TUS

• BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Pa.

DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 3268, Denver 17, Colo.

• FORNEY'S INC., Elm & Russell Sts., New Castle, Pa.

• THE GALIGHER CO., 545 W. 8th South St., Salt Lake City 4, Utah

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

GENERAL SCIENTIFIC EQUIPMENT CO., 2735 W. Huntingdon St., Philadelphia 32, Pa.

THE HAYS CORP., 742 East 8th St., Michigan City 21, Ind.

HUMBOLDT MFG. CO., 2014 N. Whipple St., Chicago 47, Ill.

• INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

J. A. JONES CONCRETE MACHINERY CO., 106 Horning Road, Pittsburgh, Pa.

• THE MINE & SHELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.

## DIRECTORY

**SPEERY PRODUCTS, INC.**, Shelter Rock Rd., Danbury, Conn.

• **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.

• **THE W. S. TYLER CO.**, 3615 Superior Ave., Cleveland 14, Ohio

• **UNIVERSAL VIBRATING SCREEN CO.**, Deane Blvd. & St. Paul Rd., Racine, Wis.

• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

• **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

**LABORATORIES, Testing**

• **BALDWIN-LIMA-HAMILTON CORP.**, Eddystone Div., Philadelphia 42, Pa.

• **DENVER EQUIPMENT CO.**, 1400 17th Street, P.O. Box 5268, Denver 17, Colo.

• **THE CALIGHER CO.**, 545 W. 8th South St., Salt Lake City 4, Utah

• **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 3, N.Y.

• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

• **WESTINGHOUSE ELECTRIC CORP.**, Gateway Bldg., Pittsburgh 30, Pa.

**LACING, Belt (see Belt Fasteners & Lacing)**

**LADDERS, Dredge**

• **AMERICAN MANGANESE STEEL DIV.**, AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

• **EAGLE IRON WORKS**, 127 Helcomb Ave., Des Moines 4, Iowa

• **MORRIS MACHINE WORKS**, E. Genesee St., Baldwinsville, N.Y.

• **YUBA MFG. CO.**, 251 California St., San Francisco 4, Calif.

**LAUNDERS (see Chutes)**

**LIFT TRUCKS, Concrete Products, etc.**

1. Gas
2. Electric
3. Gas-Electric

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio  
1—2—3

BAKER-BAULANG COMPANY, West 80th St., Cleveland, Ohio

BICKERSTAFF, INC., Columbus, Ohio  
1

• THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois  
1

• CLARK EQUIPMENT CO., Industrial Truck Div., Battle Creek 60, Mich.  
1—2

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
1—2—3

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.  
1—2—3

• EASTON CAR & CONSTRUCTION CO., Easton, Pa.  
2—3

• ERICKSON POWER LIFT TRUCKS, INC., 1401 Marshall St. N.E., Minneapolis 13, Minn.  
1

• GERLINGER CARRIER CO., Dallas, Ore.  
1

HYSTER COMPANY, 2918 N.E. Clackamas St., Portland 8, Ore.  
1

• THE KNICKERBOCKER CO., Truxton Div., 603 Liberty St., Jackson, Mich.  
1

KWIK MIX CO., Port Washington, Wisc.  
1

LIFT TRUCKS, INC., 2425 Spring Grove Ave., Cincinnati 14, Ohio  
2

MOBILIFT CORP., 835 S.E. Main St., Portland 14, Ore.  
1

• PRASCHAU MACHINE CO., Marshfield, Wis.

THE READY-POWER CO., 11231 Freud Ave., Detroit 14, Mich.  
3

TRACTO-LIFT COMPANY, 800 E. 18th St., Kansas City 8, Mo.  
1—2—3

• TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.  
1

THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.  
1—2—3

**LIGHTERS, Fuse (see Blasting Supplies)**

**LIME KILNS (see Kilns)**

**LIME AND LIMESTONE SPREADERS**

• BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

FLINI CO., 502 N. Vermillion St., Streeter, Ill.

HERCULES STEEL PROD. CORP., Sherman Street, Gallion, Ohio

HIGHWAY EQUIPMENT CO., INC., 623 D Ave. N.W., Cedar Rapids, Iowa

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

**LIME MORTARS & PUTTY PLANTS**

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

SERVICE ENGR. CO., Summit, N.J.

**LIME PLANTS**

• CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

• IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

• F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.

• STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.

• UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa

**LINERS, Kiln (see Refractories)**

**LINERS, METAL, Grinding Mill**

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wisc.

• AMERICAN BRAKE SHOE CO., 220 Park Ave., New York 17, N.Y.

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 5268, Denver 17, Colo.

ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.

• HARDINGE CO., INC., 240 Arch St., York, Pa.

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

• THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.

• UNITED STATES STEEL CORP., 325 William Penn Plaza, Pittsburgh 30, Pa.

• THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.  
2—3

• THE JAEGER MACHINE CO., 350 W. Spring St., Columbus 16, Ohio  
3

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.  
3

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa.  
2

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York  
1—2—3

• LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.  
2

• LE ROI COMPANY, 1706 South 68th St., Milwaukee 14, Wis.  
3

N. P. NELSON IRON WORKS, INC., 820 Bloomfield Ave., Cliff-ton, N.J.  
3

• PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.  
3

• STOODY CO., Whittier, Calif.

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

• THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.

**LINERS, Pump, Metal**

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

• GARDNER-DENVER CO., Quincy, Ill.

• PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.  
3

• STOODY CO., Whittier, Calif.

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

• THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.

**LINERS, Pump, Metal**

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

• GARDNER-DENVER CO., Quincy, Ill.

• PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.  
3

• STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.  
1—2—3

• TRACTOMOTIVE CORP., Deerfield, Ill.

• TOWMOTOR CORP., 1226 E. 152nd St., Cleveland 10, Ohio

TRIANGLE ENGINEERING CO., 2948 W. 26th St., Chicago 23, Ill.  
3

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio  
3—3

• WILLARD CONCRETE MACHINERY CO., LTD., 11700 Wright Rd., Lynnwood, Calif.  
3

**LOADERS**

1. Tractor
2. Underground

• ALLIS-CHALMERS MFG. CO., Tractor Division, Milwaukee 1, Wisc.  
1

ATHEY PRODUCTS CORP., 5631 W. 65th St., Chicago 38, Ill.  
1—2—3

AMERICAN CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio  
1—2—3

AMERICAN HOIST AND DERRICK COMPANY, 43 South Robert St., St. Paul 1, Minnesota  
3

ATHY PRODUCTS CORP., 5631 W. 65th St., Chicago 38, Ill.  
1—2—3

BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.  
2—3

• BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.  
2—3

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.  
3

BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio  
2—3

C & D MANUFACTURING CO., Perkins, Calif.

• EAGLE CRUSHER CO., INC., 900 Harding Way East, Gallion, Ohio  
3

THE FAIRFIELD ENGINEERING CO., 324 Bernhart St., Marion, Ohio  
3—3

PLEXOVEYOR MFG. CO., 1220 S. Asomo St., Denver 19, Colo.  
3—3

THE GALLION ALLSTEEL BODY CO., 605 S. Market St., Gallion, Ohio  
3

GEO HAASS MFG. CO., INC., Div. Pettibone Mulliken Corp., 350 Fifth Ave., New York 1, N.Y.  
3

• THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.  
1

• INTERNATIONAL HARVESTER CO., 100 N. Michigan Ave., Chicago 1, Ill.  
1

• THE JAEGER MACHINE CO., 350 W. Spring St., Columbus 16, Ohio  
1

• LESSMANN MFG. CO., E. 20 and Easton Blvd., Des Moines 4, Iowa  
1

• LE ROI CO., 1706 S. 68th St., Milwaukee 14, Wisc.  
1

\* A dot before name indicates ROCK PRODUCTS Advertiser

# DIRECTORY

- THE OLIVER CORP., 400 W. Madison St., Chicago 6, Ill.
- ROGERS IRON WORKS CO., Joplin, Mo.
- TOWMOTOR CORP., 1236 E. 182nd St., Cleveland 10, Ohio  
RICHARD P. WALSH CO., 30 Church St., New York, New York

## LOADERS, Block

- BUILDERS EQUIPMENT COMPANY, 4012 N. Central Avenue, Phoenix, Arizona

## LOCOMOTIVES

- 1. Diesel
- 2. Electric
- 3. Gasoline
- 4. Oil (L.P.G.)
- 5. Storage Battery
- BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Pa.  
1—2
- DAVENPORT BESSLER CORP., 2305 Rockingham Road, Davenport, Iowa  
1—2—3—4
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 3, N.Y.  
1—2
- PLYMOUTH LOCOMOTIVE WORKS, DIV. OF THE FATE ROOT HEATH CO., Plymouth, Ohio  
1—3
- VULCAN IRON WORKS, 730 Se. Main St., Wilkes-Barre, Pa.  
1—2—3—4—5

## LOCOMOTIVES

- 1. Diesel-Electric
- 2. Gasoline-Electric
- 3. Oil (L.P.G.)-Electric
- BALDWIN-LIMA-HAMILTON CORP., Eddystone Div., Philadelphia 42, Pa.  
1
- DAVENPORT BESSLER CORP., 2305 Rockingham Road, Davenport, Iowa  
1—2—3—5
- DIFFERENTIAL STEEL CAR CO., Findlay, Ohio  
3
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 3, N.Y.  
1—2—3
- PLYMOUTH LOCOMOTIVE WORKS, DIV. OF THE FATE ROOT HEATH CO., Plymouth, Ohio  
1
- VULCAN IRON WORKS, 730 Se. Main St., Wilkes-Barre, Pa.  
1—2—3

## LOG WASHERS, Aggregates (see Scrubbers)

## LORRIES, WEIGH (see Weigh Lorries)

## LUBRICANTS, Grease, Oil, etc.

- ALEMITE DIV., STEWART-WARNER CORP., 1826 Diversey Pkwy., Chicago 14, Ill.
- CITIES SERVICE OIL CO., Sixty Wall Tower, New York 8, N.Y.
- FISKE BROS. REFINING CO., LUBRICATE DIV., 129 Lockwood St., Newark 5, N.J.
- GULF OIL CORP., GULF REFINING CO., Gulf Bldg., Pittsburgh 30, Pa.  
E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Philadelphia 33, Pa.
- NEW YORK & NEW JERSEY LUBRICANT CO., 292 Madison Ave., New York 17, N.Y.
- THE TEXAS COMPANY, 135 East 42nd St., New York 17, N.Y.

## STANDARD OIL CO. OF CALIFORNIA, 235 Bush St., San Francisco, Calif.

- SUN OIL COMPANY, 1608 Walnut St., Philadelphia 3, Pa.
- SWAN-FINCH OIL CORP., 205 E. 42nd St., New York 17, N.Y.
- THE TEXAS COMPANY, 135 East 42nd St., New York 17, N.Y.

## LUBRICANTS, Wire Rope

- AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave. N.W., Rockefeller Bldg., Cleveland 13, Ohio
- ALEMITE DIV., STEWART-WARNER CORP., 1826 Diversey Pkwy., Chicago 14, Ill.
- FISKE BROS. REFINING CO., LUBRICATE DIV., 129 Lockwood St., Newark 5, N.J.
- GULF OIL CORP., GULF REFINING CO., Gulf Bldg., Pittsburgh 30, Pa.  
E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Philadelphia 33, Pa.
- JONES & LAUGHLIN STEEL CORP., 3 Gateway Center, Pittsburgh 30, Pa.
- LESCHEN WIRE ROPE DIV., 9909 Kennerly Ave., St. Louis 12, Mo.
- MACWHYTE COMPANY, 2949-14th Ave., Kenosha, Wis.
- NEW YORK & NEW JERSEY LUBRICANT CO., 292 Madison Ave., New York 17, N.Y.
- SAUERMAN BROS., INC., 530 S. Clinton St., Chicago 7, Ill.
- SHELL OIL COMPANY, 50 W. 50th St., New York, N.Y.
- SIMCLAIR REFINING CO., 600 Fifth Ave., New York 20, N.Y.
- SWAN-FINCH OIL CORP., 205 E. 42nd St., New York 17, N.Y.
- THE TEXAS COMPANY, 135 East 42nd St., New York 17, N.Y.

## LUBRICATING SYSTEMS

- ALEMITE DIV., STEWART-WARNER CORP., 1826 Diversey Pkwy., Chicago 14, Ill.
- THE FARVAL CORP., 2249 E. 80th St., Cleveland 4, Ohio
- LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.
- VICTOR EQUIPMENT CO., 844 Polson St., San Francisco 7, Calif.

## M

## MAGNETIC SEPARATORS

- CESCO PRODUCTS, Santa Rosa, Calif.
- DINGS MAGNETIC SEPARATOR CO., 4740 West Electric Ave., Milwaukee 46, Wis.
- THE HOMER MFG. CO., INC., Dept. 203, Lima, Ohio
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- RADIO CORP. OF AMERICA, RCA VICTOR DIV., Front & Cooper Sts., Camden 2, N.J.
- STEARNS MAGNETIC, INC., 675 S. 26th St., Milwaukee 46, Wis.

## MASONRY COLORS (see Cement and Masonry Colors)

## MASONRY SAWS

- CHAMPION MFG. COMPANY, 2028 Washington Ave., St. Louis 3, Mo.
- CLIPPER MFG. CO., 2800 Warwick, Kansas City 8, Missouri
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- EVEREADY BIKESAW CO., 1809 S. Michigan Blvd., Chicago 5, Ill.
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.

• A dot before name indicates ROCK PRODUCTS Advertiser

## MEASURING DEVICES

- 1. Weight
- 2. Volumetric (See Batchers)

## METERS

- 1. Electric
- 2. Water
- 3. Other Fluids

- BAILEY METER CO., 1050 Irannah Road, Cleveland 16, Ohio  
2—3

- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington  
2

- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.  
2

- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.  
2—3

- GENERAL ELECTRIC CO., 1 River Road, Schenectady 3, N.Y.  
1

- THE HAYS CORP., 742 East 8th St., Michigan City 21, Ind.  
3

- NEPTUNE METER CO., 50 W. 50th St., New York 20, N.Y.  
2—3

- WESTINGHOUSE ELECTRIC CO., Gateway Bldg., Pittsburgh 30, Pa.

## MILLS, Grinding

- 1. Ball
- 2. Compartment
- 3. Laboratory
- 4. Pneumatic
- 5. Rod
- 6. Bell Type
- 7. Tube

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.  
1—2—3—4—5—6

- AMERICAN PULVERIZER COMPANY, 1245 Mackland Avenue, St. Louis 10, Missouri  
3

- AMERICAN BRAKE SHOE COMPANY, 230 Park Avenue, New York 17, New York  
1

- THE BABCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y.  
1

- BRADLEY PULVERIZER CO., 123 5. Third St., Allentown, Pa.  
A—5

- BROOKS EQUIPMENT & MFG. CO., 2018 Davenport Road, Knoxville 8, Tenn.  
1

- THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 573 Madison Avenue, New York 22, New York  
1

- DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 5266, Denver 17, Colo.  
1—2—3—4—6

- THE FAIRFIELD ENG. CO., 324 Barnhart St., Marion, Ohio

- THE GALIGHER CO., 345 W. 8th South St., Salt Lake City 4, Utah  
3

- COMBUSTION ENGINEERING, INC., RAYMOND DIV., 1313 N. Broad St., Chicago 22, Ill.  
3

- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.  
1

- HARDING CO., INC., 240 Arch St., York, Pa.  
1—2—3—4—5—6

- W. P. HEINERIK, INC., 50 Broad St., New York 3, N.Y.  
1—2—3—4—5—6

- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa  
1

- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio  
1

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York  
1—2—3—4—5—6

- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburg, Kan.  
1

- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.  
1—3—4—6

- NORDBORG MFG. CO., 3075 S. Chase Ave., Milwaukee 1, Wis.  
1—2—4—6

- PATTERSON FOUNDRY & MANUFACTURING CO., East Liverpool, Ohio  
1

- F. L. SMITH & CO., 11 West 42nd St., New York 34, N.Y.  
1—2—6

- SPROUT WALDRON & CO., INC., Munsey, Pa.  
3

- THE STEARNS-ROGER MFG. CO., 1720 California St., Denver 2, Colo.  
1—4

- STRAU MFG. CO., INC., 307 Chestnut St., Oakland 20, Calif.  
1—3—4—6

- STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass.  
3—5

- TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.  
1—3—4—6

- UNITED STATES STEEL CORP., 525 William Penn Place, Pittsburgh 30, Pa.  
1

- UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa  
1

- VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa.  
1—6

- RICHARD P. WALSH CO., 30 Church St., New York, New York  
1

- THE WEBB CORP., Webb City, Mo.

- WESTERN MACHINERY CO., 760 Polson St., San Francisco 7, Calif.  
4

- WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo.  
3

## MILLS, Washing (see Scrubbers)

## MILLS, Hammer (see Crushers, Hammer)

## MIXER BODIES, Truck (see Bodies)

## MIXERS, Concrete (see Concrete Mixers)

## MIXERS, Plaster & Mortar

- J. W. APPLEY & SON, INC., 831 9th Street North, St. Petersburg 2, Florida

- CHAIN BELT COMPANY, 4449 W. Greenfield Ave., Milwaukee 12, Wis.

- CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, N.C.

- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.

- GILSON BROTHERS CO., Fredonia, Wis.

- THE JAEGER MACHINE CO., 530 W. Spring St., Columbus 16, Ohio

- TRUCK-MAN DIV., THE KNICKERBOCKER CO., 603 Liberty St., Jackson, Mich.

- KWIK MIX COMPANY, Port Washington, Wis.

- MULTIPLEX MACHINERY CO., Div. of Multiplex, Inc., Fremont St., Elmore, Ohio

- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

## DIRECTORY

### MIXERS, Pugmill

- BARBER-GREENE CO., 400 N. Highland Ave., Aurora, Ill.
- CONCRETE TRANSPORT MIXER CO., 4987 Flyer Ave., St. Louis 9, Mo.
- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- JEFFREY MANUFACTURING CO., 925 North 4th St., Columbus 16, Ohio
- KWIK MIX COMPANY, Fort Washington, Wis.
- LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.
- SINTERING MACHINERY CORP., Netcong, N.J.
- STURTEVANT MILL CO., 102 Clayton St., Dorchester, Boston 22, Mass.
- RICHARD F. WALSH CO., 30 Church St., New York, New York

### MIXERS, Slurry (see Slurry Mixers)

### MORTAR COLORS (see Cement and Masonry Colors)

### MOTOR TRACTORS, Off-Highway

- 1. Diesel
- 2. Gas
- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin 1-2
- ALLIS-CHALMERS MFG. CO., Tractor Division, Milwaukee 1, Wis. 2
- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- THE EUCLID ROAD MACHINERY CO., 1361 Chardon Road, Cleveland 17, Ohio
- THE GALION ALLSTEEL BODY CO., 605 S. Market Street, Galion, Ohio
- GERLINGER CARRIER CO., Dallas, Ore.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- KOEHRING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wis.
- LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.
- MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y.
- MARMON-HERRINGTON CO., INC., 1511 W. Washington St., Indianapolis 7, Ind.
- THE WHITE MOTOR CO., 842 E. 79th St., Cleveland 1, Ohio
- THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.

### MOTOR TRUCK CONCRETE MIXERS (see Bodies)

### MOTOR TRUCK DRIVES AND DIFFERENTIALS, Special

- AMERICAN STEEL FOUNDRIES, 410 N. Michigan Ave., Chicago 11, Ill.
- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- MARMON-HERRINGTON CO., INC., 1511 W. Washington St., Indianapolis 7, Ind.

### MOTOR TRUCKS, Highway

- CHEVROLET MOTOR CO., General Motors Bldg., Detroit 21, Mich.

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- DODGE DIV. CHRYSLER CORP., 7900 Jos. Campau St., Detroit 11, Mich.
- GERLINGER CARRIER CO., Dallas, Ore.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y.
- THE WHITE MOTOR CO., 842 E. 79th St., Cleveland 1, Ohio

### MOTOR TRUCKS, Off-Highway End, Side, Bottom, Dump, etc.

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- ALLIS-CHALMERS MFG. CO., Tractor Division, Milwaukee 1, Wis. CONVERTO MFG. CO., Cambridge City, Ind.
- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- DART TRUCK CO., 2623 Oak St., Kansas City 8, Mo.
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- THE EUCLID ROAD MACHINERY CO., 1361 Chardon Road, Cleveland 17, Ohio
- THE GALION ALLSTEEL BODY CO., 605 S. Market Street, Galion, Ohio
- GERLINGER CARRIER CO., Dallas, Ore.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- KOEHRING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wis.
- LE TOURNEAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.
- MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y.
- MARMON-HERRINGTON CO., INC., 1511 W. Washington St., Indianapolis 7, Ind.
- THE WHITE MOTOR CO., 842 E. 79th St., Cleveland 1, Ohio
- THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.

### MOTOR TRUCK TRACTORS, Highway

- 1. Diesel
- 2. Gasoline
- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- 1-2
- MACK TRUCKS, INC., Empire State Bldg., New York 1, N.Y.
- 1-2
- MARMON-HERRINGTON CO., INC., 1511 W. Washington St., Indianapolis 7, Ind.
- 1-2
- THE WHITE MOTOR CO., 842 E. 79th St., Cleveland 1, Ohio
- 1-2

### MOTORS (see Electric Motors)

### N

### NOZZLES, Spray

- AMERICAN BRAKE SHOE CO., 230 Park Avenue, New York 17, N.Y.

\* A dot before name indicates ROCK PRODUCTS Advertiser

- BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Massachusetts
- CARLYLE RUBBER CO., INC., 62 Park Place, New York City 7, N.Y.

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.
- DEISTER MACHINE CO., 1933 E. Wayne St., Fort Wayne 4, Ind.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa
- LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

### NOZZLES, Washing

- BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Mass.
- CARLYLE RUBBER CO., INC., 62 Park Place, New York City 7, New York
- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.
- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

P

### PALLETS, Concrete Products

1. Steel
2. Wood
3. Other

- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio 1-2-3
- J. W. APPLEY & SON, INC., 831 9th Street North, St. Petersburg 2, Florida 1-3
- BUILDERS STRUCTURAL STEEL CORP., 2880-2912 East 34th St., Cleveland 15, Ohio 1

- CHASE CONCRETE MACHINERY CO., 94 Grandview Ave., Buffalo 23, N.Y. 1

- THE COMMERCIAL SHEARING & STAMPING CO., 1775 Logan Ave., P.O. Box 719, Youngstown 1, Ohio 1

- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, 1-2-3

- CONCRETE MACHINERY CO., P.O. Drawer 60, Hickory, N.C. 3

- FABRICATORS STEEL CORP., 3404 New River Road, P.O. Box 87, Blacksburg, Md.

- FABRICATORS STEEL & MFG. CORP., 850 East 133rd St., New York 34, N.Y.

- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo. 1-2
- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa. 1

- GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N.J. 1-3

- F. C. GEORGE MACHINE CO., INC., 100 S. Westmoreland Drive, Orlando, Fla. 3

- MILLER EQUIPMENT CO., INC., P.O. Box 1566, Salisbury, N.C. 1

- MULTIPLEX MACHINERY CO., Div. of Multipack, Inc., Fremont St., Elmore, Ohio 1-2-3

- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich. 1

- PRASCHAK MACHINE CO., Marshfield, Wis. 1

- WITTEMAN MACHINERY CO., Farmingdale, N.J. 1

### PALLET CLEANERS

- W. A. ANTHONY ENG. CO., Berea, Ohio

- BERGEN MACHINE & TOOL COMPANY, INC., 189 Franklin Avenue, Nutley 10, New Jersey

- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.

- SPRINGFIELD PALLET & CLEANER MFG. CO., 1800 N. Limestone St., Springfield, Ohio

### PANEL BOARDS, Electric

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

- THE MAYS CORP., 742 E. 8th St., Michigan City 21, Ind.

- JOHNS-MANVILLE, 22 East 40th St., New York 16, N.Y.

- M & M ENGR. CORP., 1017 W. 23rd St., Indianapolis 23, Ind.

## DIRECTORY

**WESTINGHOUSE ELECTRIC CORP.**,  
Gateway Bldg., Pittsburgh 30, Pa.

### PANS, GRINDING, Wet and Dry

- EAGLE IRON WORKS, 127 Holcombe Ave., Des Moines 4, Iowa
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- McLANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa.

### PANS, APRON, CONVEYOR (see Conveyors, Apron)

### PERFORATED METAL (see Screen Plate)

### PHOTO-ELECTRIC CELLS

- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### PILLOW BLOCKS (see Blocks, Pillow)

### PIPE, Asbestos

JOHNS-MANVILLE, 22 E. 40th St., New York 16, N.Y.

### PIPE, Dredge Standard

- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.
- TAYLOR FORGE & PIPE WORKS, P.O. Box 485, Chicago 90, Ill.

### PIPE FITTINGS

- BLACK BROS. CORP., 503 9th Ave., Mendota, Ill.
- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.
- HAYNES STELLITE CO., 725 S. Lindsay, Kokomo, Ind.
- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.
- TAYLOR FORGE & PIPE WORKS, P.O. Box 485, Chicago 90, Ill.

### PIPE, Rubber Lined

- GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.
- B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio
- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.
- PIONEER RUBBER MILLS, 335 Sumner St., San Francisco 11, Calif.
- RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

### PIPE, Steel, (Spiralwelded)

- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.

### PLANERS, Shale

- EAGLE IRON WORKS, 127 Holcombe Ave., Des Moines 4, Iowa
- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.

### PLASTER MIXERS (see Mixers, Plaster)

### PNEUMATIC CONVEYORS (see Conveyors, Air)

### POLISHING MACHINES, Concrete

- CHICAGO PNEUMATIC TOOL CO., 6 E. 44th St., New York 17, N.Y.

### PONTOONS, Dredge and Pipe

- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- NAYLOR PIPE CO., 1237 E. 92nd St., Chicago 19, Ill.

### PORTABLE AGGREGATES PLANTS, Crushing and Screening Plants (see Crushing and Screening Plants, Mobile Mounted)

### POWDER, Blasting (see Explosives and Dynamite)

### POWER STATION EQUIPMENT

- BAILEY METER COMPANY, 1050 Ivanhoe Road, Cleveland 16, Ohio
- CATERPILLAR TRACTOR CO., Peoria 8, Illinois
- DRAVO CORP., Dravo Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- THE HAYS CORP., 742 E. 8th St., Michigan City 21, Ind.
- JEFFREY MANUFACTURING CO., 925 North 4th St., Columbus 16, Ohio
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### PRECIPITATORS, Dust, Electrical (see Dust Collectors, Electrical)

### PREHEATERS, for Kilns, etc.

- FULLER CO., 128 Bridge St., Catskill, Pa.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

### PROPORTIONING EQUIPMENT (see Batchers)

### PROTECTIVE COATINGS

- GOODALL RUBBER CO., 403 Whitehead Road, Trenton 4, N.J.
- A. C. HORN CO., INC., 10th St. & 44th Ave., Long Island City 1, N.Y.
- REARDON INDUSTRIES, INC., 2837 Stanton Ave., Cincinnati 6, Ohio
- RUST-OLEUM CORP., Evanston, Ill.

### PULLERS, Car (see Car Movers)

### PULLERS, Gear, Wheel and Bearing

- ARMSTRONG-BRAY & COMPANY, 5346 Northwest Highway, Chicago 30, Illinois
- RODERS HYDRAULIC, INC., 7401 Walker St., Minneapolis 16, Minn.

### PULLEYS, Clutch

- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.
- DODGE MFG. CORP., 500 S. Union St., Mishawaka, Ind.
- LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.

### PULLEYS, Conveyor and Elevator

- THE AMERICAN PULLEY CO., 4200 Wisconsin Ave., Philadelphia 29, Pa.

- BARBER-GREENE COMPANY, 400 N. Highland Avenue, Aurora, Ill.
- BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Illinois
- BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

### BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio

- CONTINENTAL GIN CO., 4500 5th Ave. S., Birmingham, Ala.

### DODGE MFG. CORP., 500 S. Union St., Mishawaka, Ind.

- FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

### HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.

- IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

### THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

- W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill.

### LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

- E. F. MARSH ENGR. CO., 4324 W. Clayton Ave., St. Louis 10, Mo.

### MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

- ROGERS IRON WORKS CO., Jefferson, Mo.

### SPROUT WALDRON & CO., INC., Munsey, Pa.

- TRANSALL, INC., 109 N. 11th St., Birmingham 4, Ala.

### WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

- WOODDALE MACHINE & MFG. CO., Commercial Ave., Wooddale, Ill.

- T. B. WOODS SONS CO., 5th Ave., Chambersburg, Pa.

- YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

### PULLEYS, Magnetic (see Magnetic Separators)

### PULP DENSITY CONTROLLERS

- THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

### PULVERIZERS FUEL SYSTEMS (see Coal Pulverizing Equipment, Direct Firing)

### PULVERIZERS (see Mills)

### PUMPS, Air Lift

- 1. Comair
- 2. Slurry
- 3. Water

### AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

### CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

- FULLER CO., 128 Bridge St., Catskill, Pa.

### THE GALINGER CO., 545 W. 8th South St., Salt Lake City 4, Utah

### GARDNER-DENVER CO., Quincy, Ill.

- 1—2—3

### INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y.

- 2—3

### KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

- 1—3—3

### • F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

- 2

- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

### PUMPS, Asphalt

- AMERICAN BRAKE SHOE COMPANY, 230 Park Ave., New York 17, N.Y.

- HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.

- LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.

### PUMPS, Cement

- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.

- FULLER CO., 128 Bridge St., Catskill, Pa.

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

- LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.

- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y.

- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

- RICHARD P. WALSH CO., 30 Church St., New York, New York

- A. R. WILFLEY & SONS, INC., 635 18th St. (Denham Bldg.), Denver, Colo.

### PUMPS, Concrete

- CHAIN BELT COMPANY, 4849 W. Greenfield Ave., Milwaukee 1, Wis.

- LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo.

- RICHARD P. WALSH CO., 30 Church St., New York, New York

### PUMPS, Dredge

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.

- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

- HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.

- KANSAS CITY HAY PRESS CO., 815 Woodswether St., Kansas City, Mo.

- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y.

- NAGLE PUMPS, INC., 1269 Center Ave., Chicago Heights, Ill.
- PEKOR IRON WORKS, P. of E. 9th Ave., Columbus, Ga.

- PITTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.

- THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.
- RICHARD P. WALSH CO., 30 Church St., New York, New York

- YUBA MFG. CO., 251 California St., San Francisco 4, Calif.

### PUMPS, Sand

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.

- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

- DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 3346, Denver 17, Colo.

- THE GALINGER CO., 545 W. 8th South St., Salt Lake City 4, Utah

- HETHERINGTON & BERNER, INC., 701 Kentucky Ave., Indianapolis 7, Ind.

## DIRECTORY

- KANSAS CITY HAY PRESS CO., 815 Woodswether St., Kansas City, Mo.
- KROGH PUMPS, 575 Harrison St., San Francisco, Calif.
- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y.
- NAGLE PUMPS, INC., 1269 Center Ave., Chicago Heights, Ill.
- PEKOR IRON WORKS, Ft. of E. 9th Ave., Columbus, Ga.
- PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.
- SMITH ENGINEERING WORKS, 332 E. Capitol Dr., Milwaukee 12, Wis.
- THOMAS FOUNDRIES, INC., 3800 10th Ave., P.O. Box 1111, Birmingham 1, Ala.
- RICHARD P. WALSH CO., 30 Church St., New York, New York
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.
- A. R. WILFLEY & SONS, INC., 635 18th St. (Denham Bldg.), Denver, Colo.
- YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

### PUMPS, Slurry

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y.
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- DEMING CO., Salem, Ohio
- DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 5268, Denver 17, Colo.
- THE DORE CO. ENGRS., Berry Place, Stamford, Conn.
- THE GALIGHER CO., 545 W. 8th South St., Salt Lake City 4, Utah 1-4
- GARDNER-DENVER CO., Quincy, Ill., 1-5
- GAR WOOD IND., INC., Wayne Division, Wayne, Mich.
- GORSHAN-BUFF CO., 305 Bowman St., Mansfield, Ohio 1-3-4-6
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y. 1-2-5-6
- THE JAAGER MACHINE CO., 530 W. Spring St., Columbus 16, Ohio 1-3
- KANSAS CITY HAY PRESS CO., 815 Woodswether St., Kansas City, Mo. 4
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- KOEHRING COMPANY, 3026 W. Concordia Ave., Milwaukee 16, Wis.
- KROGH PUMPS, 575 Harrison St., San Francisco, Calif.
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan.
- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y.
- NAGLE PUMPS, INC., 1269 Center Ave., Chicago Heights, Ill.
- OLIVER UNITED FILTERS, INC., 33 W. 42nd St., New York 36, N.Y.
- OLIVER UNITED FILTERS, INC., 2900 Glascott St., Oakland 1, Calif.
- PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill.
- QUINN-ROGERS MFG. CO., 345 Burkhardt Court, Forest Park, Ill.
- F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.
- A. R. WILFLEY & SONS, INC., 635 18th St. (Denham Bldg.), Denver, Colo.

### PUMPS

- 1. Centrifugal
- 2. Deep Well
- 3. Diaphragm
- 4. Rubber-Lined
- 5. Vacuum
- 6. Hydraulic
- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis. 1-4-5
- AMERICAN BRAKE SHOE CO., 230 Park Ave., New York 17, N.Y. 1-2
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill. 1-6

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis. 1-3
- CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y. 5

- THE COMMERCIAL SHEARING & STAMPING CO., 1775 Logan Ave., P.O. Box 719, Youngstown 1, Ohio 6
- DEMING CO., Salem, Ohio 1-2-6

- DENVER EQUIPMENT CO., 1400 17th Street, P.O. 5268, Denver 17, Colo. 1-3-4
- THE DORE CO. ENGRS., Berry Place, Stamford, Conn. 3

- ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 23rd Ave., Portland 10, Ore. 1
- FOOD MACHINERY & CHEMICAL CORP., PEERLESS PUMP DIV., 301 W. Ave. 26, Los Angeles 31, Calif. 1-2

- FULLER CO., 128 Bridge St., Cetaria, Pa. 8
- THE GALIGHER CO., 545 W. 8th South St., Salt Lake City 4, Utah 1-4

- GARDNER-DENVER CO., Quincy, Ill., 1-5
- GAR WOOD IND., INC., Wayne Division, Wayne, Mich. 6

- GORSHAN-BUFF CO., 305 Bowman St., Mansfield, Ohio 1-3-4-6
- INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y. 1-2-5-6

- THE JAAGER MACHINE CO., 530 W. Spring St., Columbus 16, Ohio 1-3
- KANSAS CITY HAY PRESS CO., 815 Woodswether St., Kansas City, Mo. 4

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York 1-3-5-6
- KROGH PUMPS, 575 Harrison St., San Francisco, Calif. 4

- LINCOLN ENGINEERING CO., 5701 Natural Bridge Ave., St. Louis 20, Mo. 6
- McNALLY PITTSBURG MFG. CORP., W. Third St., Pittsburgh, Kan. 1

- MECKUM ENGINEERING, INC., Dayton Rd., Ottawa, Ill.
- MORRIS MACHINE WORKS, E. Genesee St., Baldwinsville, N.Y. 1

- NAGLE PUMPS, INC., 1269 Center Ave., Chicago Heights, Ill. 1
- NATIONAL LIFT CO., 800 Lowell St., Ypsilanti, Mich. 6

- OLIVER UNITED FILTERS, INC., 2900 Glascott St., Oakland 1, Calif. 3
- OLIVER UNITED FILTERS, INC., 33 W. 42nd St., New York 36, N.Y. 1-3-4-5

- PEKOR IRON WORKS, Ft. of E. 9th Ave., Columbus, Ga. 1
- PETTIBONE MULLIKEN CORP., 4700 W. Division St., Chicago 51, Ill. 6

- RODERS HYDRAULIC INC., 7401 Walker St., Minneapolis 16, Minn. 6
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif. 1-3-4

\* A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

- A. R. WILFLEY & SONS, INC., 635 18th St. (Denham Bldg.), Denver, Colo. 1-4-6
- WORTHINGTON CORP., So. 2nd St., Plainfield, N.J. 1-2-5-6
- YUBA MFG. CO., 351 California St., San Francisco 4, Calif. 1

### PYROMETERS

- BAILEY METER CO., 1030 Ivanhoe Road, Cleveland 10, Ohio
- CAMBRIDGE INSTRUMENT CO., INC., Grand Central Terminal, New York 17, N.Y.
- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- F. L. SMITH & CO., 11 W. 42nd St., New York 36, N.Y.

### R

### RACKS, Curing, Concrete Masonry

- ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio
- BUILDERS STRUCTURAL STEEL CORP., 2880-2912 East 34th St., Cleveland 15, Ohio
- THE CHASE FOUNDRY & MFG. CO., 2300 Parsons Avenue, Columbus 7, Ohio
- COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington
- FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.
- GENERAL ENGINES CO., INC., 307 Hunter St., Gloucester City, N.J.
- THE KIRK & BLUM MFG. CO., 3120 Forrer St., Cincinnati 9, Ohio
- MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.
- MULTIPLEX MACHINERY CO., Div. of Multiplex Inc., Fremont St., Elmore, Ohio
- THE GENE OLSEN CORP., 401 Grace St., Adrian, Mich.
- TRUAX MACHINE & TOOL CO., 16 Michigan St., Seattle 8, Wash.
- WITTEMANN MACHINERY CO., Farmingdale, N.J.

### RAILS, Relay

- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.
- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

### RAILWAY, Industrial Equipment

- BALDWIN-LIMA-HAMILTON CORP., Eddystone Corp., Philadelphia 42, Pa.
- THE BUDA COMPANY, 184th & Commercial, Harvey, Illinois
- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.
- R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

### READY-MIXED CONCRETE PLANTS (see Batching Plants)

### READY MIXED TRUCKS (see Bodies, Ready Mixed Concrete)

### RECORDERs, Concrete Batching

- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.
- C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

- SCIENTIFIC CONCRETE SERVICE CORP., 724 Salem Ave., Elizabeth 3, N.J.

### RECORDERS

- 1. Draft
- 2. Pressure
- 3. Temperature

- BAILEY METER CO., 1030 Ivanhoe Road, Cleveland 10, Ohio 1-2-3

- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass. 2-3
- THE MAYS CORP., 742 East 8th St., Michigan City 21, Ind. 1-2-3

### RECTIFIERS, Electric

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.
- SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### REFRACTORIES, Block, Brick, Insulation

- THE BABCOCK & WILCOX CO., 161 W. 42nd St., New York 17, N.Y.
- THE DODSON MFG. CO., INC., 1463 Bowring Ave., Wichita 2, Kan.
- ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.
- GENERAL REFRactories CO., 1520 Locust St., Philadelphia 2, Pa.
- A. P. GREEN FIRE BRICK CO., 1108 E. Breckinridge St., Mexico, Mo.
- HARRISON-WALKER REFRactories CO., 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
- JOHNS-MANVILLE, 22 E. 40th St., New York 16, N.Y.
- KAISER ALUMINUM & CHEMICAL SALES, INC., 1924 Broadway, Oakland, Calif.
- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- LACLEDE-CHRISTY CO., 2000 Hampton Ave., St. Louis, Mo.
- PLIBRICO CO., 1800 N. Kingbury St., Chicago 14, Illinois
- RICHARD C. REMMEYSON CO., 3003 Medley St., Philadelphia 37, Pa.

### REGULATORS, Feed Water

- THE MAYS CORP., 742 East 8th St., Michigan City 21, Ind.

### REGULATORS, Draft, Pressure, Temperature (see Controls)

### REGULATORS, Voltage

- ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.
- ELECTRIC MACHINERY MFG. CO., 800 Central Ave., Minneapolis 13, Minn.

- GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

### RESPIRATORS

- GENERAL SCIENTIFIC EQUIPMENT CO., 2735 W. Huntingdon St., Philadelphia 32, Pa.
- MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.
- WILLSON PRODUCTS, INC., Reading, Pa.

### REVOLUTION COUNTERS (see Tachometers)

## DIRECTORY

### **REVOLVING CRANES (see Derricks, Stiffleg or Guy)**

### **RHEOSTATS**

- **ATLAS POWDER COMPANY**, Wilmington 99, Delaware
- **GENERAL ELECTRIC CO.**, 1 River Road, Schenectady 5, N.Y.

### **ROCK SPLITTERS, for Stone-Faced Masonry**

- **ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Avenue, Columbus 12, Ohio
- **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington
- **FLEMING MFG. CO.**, Dept. C, Fleming Ave., Cuba, Mo.
- **INGERSOLL-BAND CO.**, 11 Broadway, New York 4, N.Y.
- **TRUXA MACHINERY & TOOL CO.**, 16 Michigan St., Seattle 8, Wash.

### **ROCK WOOL CUPOLAS AND EQUIPMENT**

- **HARRISON-WALKER REFRAC-**TORES CO., 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
- **MARION METAL WORKS**, Cheney at Jacobs, Marion, Ohio
- **WHITING CORP.**, Harvey, Ill.

### **RODS, for Grinding Mills**

- **ALLIS-CHALMERS MFG. CO.**, 975 So. 70th St., Milwaukee 1, Wis.
- **AMERICAN FORGE**, Niles, Calif.
- **THE COLORADO FUEL AND IRON CORP.**, Continental Oil Building, Denver 2, Colorado
- **THE COLORADO FUEL AND IRON CORP.**, Wickwire Spencer Steel Division, 575 Madison Avenue, New York 22, New York
- **DENVER EQUIPMENT CO.**, 1400 17th St., P.O. Box 5268, Denver 17, Colo.
- **HARDINGE CO. INC.**, 240 Arch St., New York, Pa.
- **KENNEDY-VAN SAUN MFG. & ENG. CO.**, 2 Park Ave., New York 16, New York
- **IMFIELD STEEL CORP.**, Sheffield Station, Kansas City 3, Mo.

### **RODS, Welding, Hard-facing (see Welding Rods, Hard-facing)**

### **RODS, Welding (see Welding Rods and Electrodes)**

### **ROLLER BEARINGS (see Bearings)**

### **ROOFING AND SIDING, Industrial**

- **CHASE BAG CO.**, (Gen. Sales Office), 309 W. Jackson Blvd., Chicago 6, Ill.
- **THE CELOTEX CORP.**, 130 S. LaSalle St., Chicago 3, Ill.
- **JOHNS-MANVILLE**, 22 East 40th St., New York 16, N.Y.
- **UNITED STATES STEEL CORP.**, 325 William Penn Place, Pittsburgh 30, Pa.
- **COLUMBIA-GENEVA STEEL DIV.**, UNITED STATES STEEL CORP., 1403 Russ Bldg., San Francisco 6, Calif.

### **ROPE, Wire (see Wire Rope)**

### **RUBBER LININGS (see Chute Linings, Rubber)**

### S

### **SAFETY EQUIPMENT, Goggles, Shoes, etc.**

- **A & A MFG. CO.**, 2017 W. Clybourn St., Milwaukee 3, Wis.
- **E. D. BULLARD CO.**, 275 Eighth St., San Francisco 3, Calif.
- **CALUMET STEEL CASTINGS CORP.**, 1636 Summer St., Hammond, Ind.
- **EDMONT MFG. CO.**, Coshocton, Ohio
- **GENERAL SCIENTIFIC EQUIPMENT CO.**, 2735 W. Huntington St., Philadelphia 32, Pa.
- **GOODLAD RUBBER CO.**, 403 Whitehead Road, Trenton 4, N.J.
- **E. F. GOODRICH CO.**, 500 South Main St., Akron 11, Ohio
- **F. R. HANNON & SONS**, 1605 Wayneburg Road S.E., Canton 7, Ohio
- **JACKSON PRODUCTS, INC.**, 31739 Mound Road, Warren, Mich.
- **JOHNS-MANVILLE**, 22 East 40th St., New York 16, N.Y.
- **MINE SAFETY APPLIANCES CO.**, 201 N. Braddock Ave., Pittsburgh 8, Pa.
- **THE SURETY RUBBER CO.**, Carrollton, Ohio
- **WILLSON PRODUCTS, INC.**, Reading, Pa.

### **SAMPLING EQUIPMENT**

- **DENVER EQUIPMENT CO.**, 1400 17th St., P.O. Box 5268, Denver 17, Colo.
- **THE GALIGHER CO.**, 545 W. 8th St., Salt Lake City 4, Utah
- **STURTEVANT MILL CO.**, 102 Clayton St., Dorchester, Boston 22, Mass.

### **SAND BLAST MACHINES**

- **PANGBORN CORP.**, Hagerstown, Md.

### **SAND DRAGS (see Sand Recovery Machinery)**

### **SAND-LIME BRICK MACHINERY (see Brick Machinery)**

### **SAND RECOVERY MACHINERY, Cones, Classifiers, Dewaterers, Drags, etc.**

- **ALLIS-CHALMERS MFG. CO.**, 975 South 70th Street, Milwaukee 1, Wisconsin

- **AMERICAN MANGANESE STEEL DIV.**, AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

- **BODINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

- **BONDED SCALE AND MACHINE CO.**, 2193 S. Third St., Columbus 7, Ohio

- **THE DEISTER CONCENTRATOR CO.**, 935 Glasgow Ave., Fort Wayne 1, Ind.

- **DEISTER MACHINE CO.**, 1933 E. Wayne St., Fort Wayne 4, Ind.

- **DENVER EQUIPMENT CO.**, 1400 17th Street, P.O. Box 5268, Denver 17, Colo.

- **DIAMOND IRON WORKS, DIV.**, GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn.

- **THE DORR CO. ENGRS.**, Berry Place, Stamford, Conn.

- **EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa

- **EQUIPMENT ENGINEERS, INC.**, 41 Sutter St., San Francisco 4, Calif.

- **FULLER CO.**, 128 Bridge St., Catskill, Pa.

- **GENERAL AMERICAN TRANSPOR-**

- TATION CORP.
- 135 S. LaSalle St., Chicago 90, Ill.

- **HARDINGE CO. INC.**, 240 Arch St., York, Pa.

- **HEWITT-ROBBINS, INC.**, 666 Glenbrook Road, Stamford, Conn.

- **IOWA MFG. CO.**, 916-16th St., N.E., Cedar Rapids, Iowa

- **JACKSON & CHURCH CO.**, 321 N. Hamilton St., Saginaw, Mich.

- **JEFFREY MANUFACTURING CORP.**, 925 North 4th St., Columbus 16, Ohio

- **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

- **LINK-BELT COMPANY**, 307 N. Michigan Ave., Chicago 1, Ill.

- **LIPPMANN ENGINEERING WORKS**, 4503 W. Mitchell St., Milwaukee 14, Wis.

- **MECKUM ENGINEERING, INC.**, Dayton Rd., Ottawa, Ill.

- **MCLANAHAN & STONE CORP.**, Wall & Jackson Sts., Hollidaysburg, Pa.

- **THE MINE & SMELTER SUPPLY CO.**, 17th & Blake, Denver 17, Colo.

- **OLIVER UNITED FILTERS, INC.**, 2900 Glasgow St., Oakland 1, Calif.

- **PIONEER ENGINEERING WORKS, INC.**, 1813 Central Ave. N.E., Minneapolis 13, Minn.

- **ROGERS IRON WORKS CO.**, Jep- lin, Mo.

- **SAUERMAN BROS. INC.**, 530 S. Clinton St., Chicago 7, Ill.

- **SMITH ENGINEERING WORKS**, 532 East Capitol Dr., Milwaukee 12, Wis.

- **SEPARATOR DIV. SOUTHWESTERN ENGINEERING CO.**, 4800 S. Santa Fe Ave., Los Angeles 58, Calif.

- **STRAUB MFG. CO. INC.**, 507 Chestnut St., Oakland 20, Calif.

- **STURTEVANT MILL COMPANY**, 102 Clayton St., Dorchester, Boston 22, Mass.

- **UNIVERSAL ENGINEERING CORP.**, 625 C Ave. N.W., Cedar Rapids, Iowa

- **UNIVERSAL ROAD MACHINERY, CO.**, 27 Merrick St., Kingston, N.Y.

- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

- **WOOLDRIDGE MFG. CO.**, Hendy Ave., Sunnyvale, Calif.

- **SCREEN CLOTH, Woven-Wire (see Wire Cloth)**

### **SCALES, Laboratory**

- **THE HOWE SCALE CO.**, Rutland, Vt.

- **HUMBOLDT MFG. CO.**, 2014 N. Whipple St., Chicago 47, Ill.

### **SCALES, Lorry (see Weigh Lorries)**

### **SCALES, Proportioning (see Batchers)**

### **SCALES, Truck, Railway**

- **BONDED SCALE AND MACHINE CO.**, 2193 S. Third St., Columbus 7, Ohio

### **SCRAPERS, Power Drag (see Cable Excavators)**

### **SCRAPERS, Tractor**

- **ALLIS-CHALMERS MFG. CO.**, 975 South 70th Street, Milwaukee 1, Wisconsin

- **ALLIS-CHALMERS MFG. CO.**, Tractor Division, Milwaukee 1, Wisconsin

- **CATERPILLAR TRACTOR CO.**, Peoria 8, Ill.

- **EUCLID DIV. GENERAL MOTORS CORP.**, 1361 Charcoal Road, Cleveland 17, Ohio

- **GLENDHILL ROAD MACHINERY CO.**, Galion, Ohio

- **LE TOURNEAU-WESTINGHOUSE CO.**, 2301 N. Adams St., Peoria 3, Ill.

- **RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

- **WOOLDRIDGE MFG. CO.**, Hendy Ave., Sunnyvale, Calif.

### **SCREEN CLOTH, Woven-Wire (see Wire Cloth)**

### **SCREEN HEATERS**

- **THE DEISTER CONCENTRATOR CO.**, 935 Glasgow Ave., Fort Wayne 1, Ind.

- **DEISTER MACHINE CO.**, 1933 E. Wayne St., Fort Wayne 4, Ind.

- **F. R. HANNON & SONS**, 1605 Waynesburg S.E., Canton 7, Ohio

- **THE W. S. TYLER CO.**, 3615 Superior Ave., Cleveland 14, Ohio

- **UNIVERSAL VIBRATING SCREEN CO.**, Demme Blvd. & St. Paul Rd., Racine, Wis.

### **SCREEN PLATE, Perforated**

- **AMERICAN MANGANESE STEEL DIV.**, AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.

- **ROBINSON MFG. CO.**, 2401 Bayshore Blvd., San Francisco 24, Calif.

- **CHICAGO PERFORATING CO.**, 2445 W. 24th Pl., Chicago 8, Ill.

- **THE COLORADO FUEL AND IRON CORP.**, Continental Oil Building, Denver 2, Colorado

- **THE COLORADO FUEL AND IRON CORP.**, Wickwire Spencer Steel Division, 575 Madison Avenue, New York 22, New York

- **CROSS ENGINEERING CO.**, Carbondale, Pa.

- **HENDRICK MFG. CO.**, 39 Dunduff St., Carbondale, Pa.

- **IOWA MFG. CO.**, 916-16th St., N.E., Cedar Rapids, Iowa

- **JOHNSTON & CHAPMAN CO.**, 2925 Carroll Ave., Chicago 12, Ill.

\* A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

- KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York
- PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn.
- JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.
- SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.
- YUBA MFG. CO., 351 California St., San Francisco 4, Calif.

**SCREENING PLANTS,  
Portable (see Crushing  
and Screening Plants  
Portable)**

**SCREENS**

1. Gravity
2. Grizzly
3. Laboratory
4. Revolving
5. Scrubber
6. Vibrating & Shaker
7. Gyrotating
8. Vertical

AJAX FLEXIBLE COUPLING CO., INC., Westfield, New York 6

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis. 3—4—5—6

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 309 E. 14th St., Chicago Heights, Ill. 2

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio 1—2—3—4—5—7

• BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio 4

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif. 4—5—6

BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio 2—6

• THE BRADFORD COMPANY, 145 Chestnut Street, New Haven, Conn. 6

• CARRIER CONVEYOR CORP., 2144 Frankfort Avenue, Louisville 6, Ky. 6

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado 2—6

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 22, New York 6

• CROSS ENGINEERING CO., Carbondale, Pa. 4—6

• THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind. 3—6

• DEISTER MACHINE CO., 1933 E. Wayne St., Fort Wayne 4, Ind. 6

DENVER EQUIPMENT CO., 1400 17th Street, P.O. Box 5264, Denver 17, Colo. 3—6

• DIAMOND IRON WORKS, DIV. GOODMAN MFG. CO., 1728 North 2nd St., Minneapolis 11, Minn. 2—4—6

• EAGLE CRUSHER CO., INC., 900 Harding Way East, Gallon, Ohio 1—2—4—5—6

• GILSON SCREEN CO., Mercer, Pa. 3

• GRUENDLER CRUSHER & PULV. CO., 2915 N. Market St., St. Louis 6, Mo. 4—6

- HENDRICK MFG. CO., 39 Dundaff St., Carbondale, Pa. 1—2—3—4—5—6

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn. 2—6—7

HUMBOLDT MFG. CO., 2014 N. Whipple St., Chicago 47, Ill. 3

• IOWA MFG. CO., 916-16th St., N.E., Cedar Rapids, Iowa 1—4—5—6

JEFFREY MANUFACTURING CO., 933 North 4th St., Columbus 16, Ohio 6

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York 1—2—4—6—7

KOLMAN MFG. CO., West 12th St. Rd., Sioux Falls, S.D. 6

• LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill. 1—2—4—5—6—7

• LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis. 2—4—5—6

• McLANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa. 4—5—6

• NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis. 2—6—8

• PIONEER ENGINEERING WORKS, INC., 1515 Central Ave. N.E., Minneapolis 13, Minn. 2—4—5—6

• PRASCHAK MACHINE CO., Marshall, Wis. 4

• PRODUCTIVE EQUIPMENT CORP., 226-28 West Lake St., Chicago 12, Ill. 6

• W. A. RIDDELL CORP., Bucyrus, Ohio 6

• ROGERS IRON WORKS CO., Joplin, Mo. 4—5—6

• ROSS SCREEN & FEEDER CO., 19 Foster St., New York 6, N.Y. 2

• SCREEN EQUIPMENT CO., INC., 1754 Walden Ave., Buffalo 23, N.Y. 6

• SIMPLICITY ENGINEERING CO., 213 S. Oak St., Durand, Mich. 2—6—7

• SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 13, Wis. 1—3—3—4—5—6—7

SOUTHWESTERN ENGR. CO., 48th Santa Fe Ave., Los Angeles, Calif. 6

• THE STEARNS ROGER MFG. CO., 1720 California St., Denver 2, Colo. 4

STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill. 2—4—6

SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 58, Calif. 1—4—7

STRAUB MFG. CO., INC., 507 Chestnut St., Oakland 20, Calif. 2—3—4—5—6

• STURTEVANT MILL COMPANY, 102 Clayton St., Dorchester, Boston 22, Mass. 3—6

SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa. 2—3—6

THE W. S. TYLER CO., 3615 Superior Ave., Cleveland 14, Ohio 1—2—3—4—5—6—7

• UNIVERSAL ENGINEERING CORP., 625 C Ave. N.W., Cedar Rapids, Iowa 2—5—6—7

• UNIVERSAL ROAD MACHINERY CO., 27 Emerick St., Kingston, N.Y. 4—8

- UNIVERSAL VIBRATING SCREEN CO., Deane Blvd., & St. Paul RR., Racine, Wis. 6

VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y. 1—3—6

RICHARD P. WALSH CO., 30 Church St., New York, N.Y. 1—2—3—4—5—6—7

THE WEBB CORP., Webb City, Mo. 6

• WILLIAMS PATENT CRUSHER & PULVERIZER CO., INC., 813 Montgomery St., St. Louis 6, Mo. 2—6

• YUBA MFG. CO., 351 California St., San Francisco 4, Calif. 6

**SHEAVES**

1. Wire Rope
2. V. Belt

• ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 7, Wisconsin 2

• AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 309 E. 14th St., Chicago Heights, III.

AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn. 1

THE AMERICAN PULLEY CO., 4200 Wissahickon Ave., Philadelphia 29, Pa. 2

BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 3, Massachusetts 2

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 22, New York 1

• CONTINENTAL GIN CO., 4500 5th Ave., South, Birmingham, Alabama 2

• DODGE MFG. CORP., 300 S. Union St., Mishawaka, Ind. 2

DURKEE-ATWOOD CO., 215 N.E. 7th St., Minneapolis 13, Minn. 2

• GATES RUBBER CO., 999 South Broadway, Denver 17, Colo. 2

• IOWA MFG. CO., 916-16th St., N.E., Cedar Rapids, Iowa 1—2

• W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago 24, Ill. 2

• JOY MFG. CO., Henry W. Oliver Bldg., Pittsburgh 22, Pa. 1

MADESCO TACKLE BLOCK CO., P.O. Box 148, Easton, Pa. 1

• McLANAHAN & STONE CORP., Wall & Jackson Sts., Hollidaysburg, Pa. 1—2

• NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis. 1

• SAUERMAN BROS. INC., 550 S. Clinton St., Chicago 7, Ill. 1

STROH PROCESS STEEL CO., 1429 High St. N.S., Pittsburgh 12, Pa. 1

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J. 1

• VULCAN IRON WORKS, 730 So. Main St., Wilkes-Barre, Pa. 1

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio 1

**SHIPPING SACKS, Paper,  
Heavy Duty**

• KRAFT BAG CORP., 630 5th Ave., New York 20, N.Y. 1

GILMAN PAPER CO., 630 5th Ave., New York 20, N.Y. 1

**SHOVELS, Crawler  
Mounted**

1. Diesel
2. Electric
3. Gasoline
4. Electric Generator

AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn. 1—2—3—4

• BALDWIN-LIMA-HAMILTON CORP., Construction Equipment Div., South Main St., Lima, Ohio 1—2—3—4

• A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

• **BAY CITY SHOVELS, INC.**, Bay City, Michigan  
1-3-3

• **BUCKYRUS-ERIE CO.**, South Milwaukee, Wisc.  
1-3-3-4

• **CATERPILLAR TRACTOR CO.**, Peoria 8, Illinois  
1

• **CLARK EQUIPMENT CO.**, Construction Machinery Div., Springfield Place, Battle Creek 80, Mich.  
1-8

**GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio  
3

**HANSON CLUTCH & MACHINE CO.**, Tiffin, Ohio  
3

• **THE FRANK G. HOUGH CO.**, 939 Sunnyside Ave., Libertyville, Ill.  
1-3

**HYSTER COMPANY**, 2918 N.E. Clackamas St., Portland 8, Ore.  
1

**INSLEY MFG. CO.**, 881 N. Olney St., Indianapolis 6, Ind.  
1-3-3-4

• **KOEHRING COMPANY**, 3036 W. Concordia Ave., Milwaukee 16, Wis.  
1-2-3-4

**LINK-BELT SPEEDER CORP.**, 1201 Sixth St., S.W., Cedar Rapids, Iowa  
1-2-3-4

**LITTLE GIANT CRANE & SHOVEL, INC.**, East 16th & Howard Drive, Des Moines 13, Iowa  
1-2-3

• **MANITOWOC ENGINEERING CORP.**, 16th & River Sts., Manitowoc, Wis.  
1-3-3

**MARION POWER SHOVEL CO.**, 617 W. Center St., Marion, Ohio  
1-2-3-4

• **NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.  
1-2-3-4

**OSGOOD-GENERAL, P.O. Box 815,** (Osgood & Cheney Ave.), Marion, Ohio  
1-2-3-4

**SCHIOLD BANTAM CO.**, Park St., Waverly, Iowa  
1-2-3-4

• **THE THEW SHOVEL CO.**, Lorain, Ohio  
1-2-3-4

**UNIT CRANE & SHOVEL CORP.**, 6411 W. Burnham St., Milwaukee 14, Wis.  
1-2-3-4

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.  
1-2-3

### SHOVELS, Tractor

• **ALLIS-CHALMERS MFG. CO.**, 975 South 70th Street, Milwaukee 1, Wisconsin

• **ALLIS-CHALMERS MFG. CO.**, Tractor Division, Milwaukee 1, Wisc.  
**THE BAKER-LULL CORPORATION**, 314 West 20th Street, Minneapolis 26, Minnesota

**J. L. CASE COMPANY**, 700 State Street, Racine, Wisc.

**DROTT MFG. CORP.**, 3841 W. Wisconsin Ave., Milwaukee 8, Wisc.

**GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio

• **THE FRANK G. HOUGH CO.**, 939 Sunnyside Ave., Libertyville, Ill.  
HYSTER CO., 2918 N.E. Clackamas St., Portland 8, Ore.

• **INTERNATIONAL HARVESTER CO.**, 180 N. Michigan Ave., Chicago 1, Ill.

• **THE JAEGER MACHINE CO.**, 380 W. Spring St., Columbus 16, Ohio

• **LESSMANN MFG. CO.**, E. 20 and Easton Blvd., Des Moines 4, Iowa

• **NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.  
RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### SHOVELS, Truck-Mounted

**AMERICAN HOIST AND DERRICK COMPANY**, 63 South Robert St., St. Paul 1, Minnesota

• **BALDWIN-LIMA-HAMILTON CORP.**, Construction Equipment Div., South Main St., Lima, Ohio

• **BAY CITY SHOVELS, INC.**, Bay City, Michigan

• **BUCKYRUS-ERIE CO.**, South Milwaukee, Wisc.

• **CLARK EQUIPMENT CO.**, Construction Machinery Div., Springfield Place, Battle Creek 80, Mich.

**GAR WOOD INDUSTRIES, INC.**, Findlay, Ohio

• **GENERAL EXCAVATOR CO.**, Marion, Ohio

**INSLEY MFG. CO.**, 881 N. Olney St., Indianapolis 6, Ind.

• **KOEHRING COMPANY**, 3036 W. Concordia Ave., Milwaukee 16, Wis.

• **LINK-BELT SPEEDER CORP.**, 1201 Sixth St., S.W., Cedar Rapids, Iowa

**LITTLE GIANT CRANE & SHOVEL, INC.**, East 16th & Howard Drive, Des Moines 13, Iowa

• **NORTHWEST ENGINEERING CO.**, 135 S. LaSalle St., Chicago 3, Ill.

• **OSGOOD-GENERAL, P.O. Box 815,** (Osgood & Cheney Ave.), Marion, Ohio

• **"QUICK-WAY" TRUCK SHOVEL CO.**, 4150 Josephine St., Denver, Colo.

• **SCHIOLD BANTAM CO.**, Park St., Waverly, Iowa

• **THE THEW SHOVEL CO.**, Lorain, Ohio

• **UNIT CRANE & SHOVEL CORP.**, 6411 W. Burnham St., Milwaukee 14, Wis.

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

### SHREDDERS, Plaster

• **GRUENDLER CRUSHER & PULV. CO.**, 2915 N. Market St., St. Louis 6, Mo.

**THE JEFFREY MFG. CO.**, 935 N. Fourth St., Columbus 16, Ohio

• **SHREDDERS, Testing**

**HUMBOLDT MFG. CO.**, 2014 N. Whipple St., Chicago 47, Ill.

• **THE W. S. TYLER CO.**, 3615 Superior Ave., Cleveland 14, Ohio

### SILOS, Storage

• **BAUGHMAN MFG. CO., INC.**, Chapman Road, Jerseyville, Ill.

• **CONCRETE TRANSPORT MIXER CO.**, 4987 Flyer Ave., St. Louis 9, Mo.

**THE DODSON MFG. CO., INC.**, 1463 Burwiss Ave., Wichita 2, Kan.

• **THE FAIRFIELD ENGINEERING CO.**, 324 Burnhart St., Marion, Ohio

• **FANNING SCHUETZ ENGINEERING CO.**, 4325 N. Third Street, Philadelphia 40, Pa.

• **C. S. JOHNSON CO., P.O. Box 71**, Champaign, Ill.

• **MACDONALD ENGR. CO.**, 188 W. Randolph St., Chicago 1, Ill.

• **THE MARINETTA CONCRETE CORP.**, 1949 Register Ave., Marietta, Ohio

**THE NICHOLSON CO., INC.**, 10 Rockefeller Plaza, New York 20, N.Y.

### SINTERING MACHINERY

• **BESSER MANUFACTURING COMPANY**, Alpena, Michigan

• **NEFF & FREY COMPANY**, Cudner, Ohio

**NICHOLS ENGINEERING & RESEARCH CORP.**, 70 Pine St., New York 5, N.Y.

• **SINTERING MACHINERY CORP.**, Netsong, N.J.

• A dot before name indicates ROCK PRODUCTS Advertiser

• **F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.

• **STEARNS MFG. CO., INC.**, 600 E. Beecher, Adrian, Mich.

### SKIP LOADERS

**ANCHOR CONCRETE MACHINERY CO.**, 1191 Fairview Ave., Columbus 12, Ohio

**BEAUMONT BIRCH CO.**, 1305 Rose St., Philadelphia 2, Pa.

• **BESSER MFG. CO.**, Alpena, Mich.

• **COLUMBIA MACHINE WORKS**, 107 South Grand, Vancouver, Washington

• **DES PLAINES CONCRETE PROD. MACHINERY**, 930 North Ave., Des Plaines, Ill.

• **THE FAIRFIELD ENGINEERING CO.**, 324 Burnhart St., Marion, Ohio

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

**MULTIPLEX MACHINERY CO.**, Div. of MULTIPACK, INC., Fremont St., Elmore, Ohio

• **THE GENE OLSEN CORP.**, 401 Grace St., Adrian, Mich.

• **STEARNS MFG. CO., INC.**, 600 E. Beecher, Adrian, Mich.

• **THE DORR CO. ENGRS.**, Barry Place, Stamford, Conn.

• **THE GALIGHEIR CO.**, 545 W. 8th South St., Salt Lake City 4, Utah

**HARDINGE CO., INC.**, 240 Arch St., York, Pa.

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

**MANITOWOC SHIPBUILDING, INC.**, 16th & River Sts., Manitowoc, Wis.

• **F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.

• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

### SLURRY FILTERS

**BIRD MACHINE COMPANY**, South Walpole, Massachusetts

• **W. P. HEINEKEN, INC.**, 50 Broad St., New York 3, N.Y.

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

**OLIVER UNITED FILTERS INC.**, 33 W. 42nd St., New York 36, N.Y.

**OLIVER UNITED FILTERS, INC.**, 2900 Glascott St., Oakland 1, Calif.

• **SINTERING MACHINERY CORP.**, Netsong, N.J.

### SLURRY MIXERS

• **THE DORR CO. ENGRS.**, Barry Place, Stamford, Conn.

• **EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa

• **HARDINGE CO., INC.**, 240 Arch St., York, Pa.

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

• **THE KOEHRING CO.**, 3036 W. Concordia Ave., Milwaukee 16, Wis.

**RICHARD P. WALSH CO.**, 30 Church St., New York, N.Y.

• **WESTERN MACHINERY CO.**, 760 Folsom St., San Francisco 7, Calif.

### SLURRY PUMPS (see Pumps, Slurry)

### SLURRY SEPARATORS

• **THE DORR CO. ENGRS.**, Barry Place, Stamford, Conn.

• **HARDINGE CO., INC.**, 240 Arch St., York, Pa.

**JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

**OLIVER UNITED FILTERS, INC.**, 2900 Glascott St., Oakland 1, Calif.

• **F. L. SMITH & CO.**, 11 West 42nd St., New York 36, N.Y.

**SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO.**, 4800 S. Santa Fe Ave., Los Angeles 58, Calif.

### SLURRY THICKENERS

**DENVER EQUIPMENT CO.**, 1400 17th Street, P.O. Box 5268, Denver 17, Colo.

• **THE DORR CO. ENGRS.**, Barry Place, Stamford, Conn.

• **EAGLE IRON WORKS**, 137 Holcomb Ave., Des Moines 4, Iowa

• **HARDINGE CO., INC.**, 240 Arch St., York, Pa.

• **W. P. HEINEKEN, INC.**, 50 Broad St., New York 3, N.Y.

**JEFFREY MANUFACTURING CO.**, 935 North 4th St., Columbus 16, Ohio

• **KENNEDY-VAN SAUN MFG. & ENG. CORP.**, 2 Park Ave., New York 16, New York

• **LINK-BELT COMPANY**, 207 N. Michigan Ave., Chicago 1, Ill.

## DIRECTORY

- NORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 1, Wis.
- OLIVER UNITED FILTERS, INC., 2900 Glaseck St., Oakland 1, Calif.
- SINTERING MACHINERY CORP., Netcong, N.J.
- WESTERN MACHINERY CO., 760 Folsom St., San Francisco 7, Calif.

**SOCKETS, Wire Rope**  
(see **Wire Rope Fittings**)

**SPEED REDUCERS** (see **Drives**)

**SPOUTS** (see **Chutes**)

**SPRAYS, Wash Water**

- BETE FOAM NOZZLE, INC., 85 Piero St., Greenfield, Mass.
- THE DEISTER CONCENTRATOR CO., 935 Glasgow Ave., Fort Wayne 1, Ind.

**SPROCKETS, Chain**

- CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.
- DIAMOND CHAIN CO., INC., 402 Kentucky Ave., Indianapolis 7, Ind.
- DODGE MFG. CORP., 500 S. Union St., Mishawaka, Ind.
- IOWA MFG. CO., 916-16th St., N.E., Cedar Rapids, Iowa
- THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio
- LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.
- McLAHAN & STONE CORP., Wall & Jackson Sts., Hellertown, Pa.
- TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.
- TRUXA MACHINERY & TOOL CO., 16 Michigan St., Seattle 8, Wash.
- WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

**STAIR TREADS & STEPS, Industrial**

- BOSTON WOVEN HOSE & RUBBER COMPANY, P.O. Box 1071, Boston 5, Massachusetts
- JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.
- UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

**STARTERS, Motor**

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- CLARK CONTROLLER CO., 1146 East 152nd St., Cleveland, Ohio
- GARDNER-DENVER CO., Quincy, Ill.
- WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

**STEAM-CURING EQUIPMENT, Concrete** (see **Kilns**)

**STEEL**

1. Abrasion Resisting
2. Bar
3. Concrete Reinforcing
4. Heat-Resisting
5. Manganese
6. Plates & Shapes
7. Sheet
8. Special Alloy

- AMERICAN BRAKE SHOE CO., 220 Park Ave., New York 17, N.Y.
- 4-5-6-8
- AMERICAN MANGANESE STEEL DIV., AMERICAN BRAKE SHOE CO., 389 E. 14th St., Chicago Heights, Ill.
- 1-4-5-6-8

• AMERICAN STEEL FOUNDRIES, 410 N. Michigan Ave., Chicago 11, Ill.

BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.

1-2-3-4-5-6-7-8

• CARTER-WATERS CORP., 2440 Pennway, Kansas City 8, Mo.

3

• CEDAR RAPIDS BLOCK CO., Cedar Rapids, Iowa

3

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

1-2-3-4-5-6-7-8

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 22, New York

1-2-3-4-5-6-8

• ELECTRIC STEEL FOUNDRY CO., 2141 N.W., 25th Ave., Portland 10, Ore.

1-4-5-8

THE FAHRALLOY CO., 150th & Lexington Avs., Harvey, Ill.

4-8

• THE FROG SWITCH & MFG. CO., Carlisle, Pa.

5

• JONES & LAUGHLIN STEEL CORP., 3 Gateway Center, Pittsburgh 30, Pa.

1-2-3-4-5-6-7-8

• JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.

1-2-3-4-5-6-7-8

• STUHL-SICKLES CO., 134 Lafayette St., Newark 5, N.J.

1-2-3-5-6-8

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

1-5-6

• THE TIMKEN ROLLER BEARING CO., 1835 DuBois Ave. S.W., Canton 6, Ohio

8

• UNITED STATES STEEL CORP., 523 William Penn Place, Pittsburgh 30, Pa.

1-2-3-4-5-6-7-8

• UNITED STATES STEEL CORP., 208 S. LaSalle St., Chicago 90, Ill.

1-2-3-4-5-6-7-8

• COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., 1403 Russ Bldg., San Francisco 6, Calif.

1-2-3-4-6-8

**STOKERS, Coal, for Lime Kilns, etc.**

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

**STORAGE SYSTEMS, Radial**

• THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio

• NEFF & FRY COMPANY, Camden, Ohio

THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

**STUCCO COLORS** (see **Cement and Masonry Colors**)

**SUPERHEATERS** (see **Boilers**)

**SWITCHBOARDS AND PANELS**

• ALLIS-CHALMERS MFG. CO., 975 S. 70th St., Milwaukee 1, Wis.

ELECTRIC MACHINERY MFG. CO., 800 Central Avenue, Minneapolis 13, Minn.

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

• THE KIRK & BLUM MFG. CO., 3120 Forrester St., Cincinnati 9, Ohio

THE READY-POWER CO., 11231 Freud Ave., Detroit 14, Mich.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

**SWITCHES, Control, Electric**

• ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

**SWITCHES, Magnetic**

• ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

## T

**TABLES, Washing, Concentrating** (see **Concentrating Tables**)

**TACHOMETERS, Counters, etc.**

• THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

INSTRUMENT DIV., STEWART-WARNER CORP., 1826 Divensky Parkway, Chicago 14, Ill.

STREETER-AMET CO., 4101 N. Ravinia Ave., Chicago 13, Ill.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

**TANKS, Gasoline**

GENERAL AMERICAN TRANSPORTATION CORP., 135 S. LaSalle St., Chicago 90, Ill.

R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

**TANKS, Sand Settling** (see **Sand Recovery Machinery**)

**TANKS, Storage, Concrete**

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

• THE MARIETTA CONCRETE CORP., 1949 Register Ave., Marietta, Ohio

NEFF & FRY CO., Camden, Ohio

THE NICHOLSON CO., INC., 10 Rockefeller Plaza, New York 20, N.Y.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

**TANKS, Storage, Steel**

BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.

• BLAW-KNOX CO., Blawnox, Pittsburgh, Pa.

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

BURNHART ENGINEERING ASSOCIATES, 30 Huntingdon Avenue, Boston, Mass.

DENVER EQUIPMENT CO., 1400 17th St., P.O. Box 5248, Denver 17, Colo.

THE FAIRFIELD ENGINEERING CO., 334 Bernhart St., Marion, Ohio

• FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

GENERAL AMERICAN TRANSPORTATION CORP., 135 S. LaSalle St., Chicago 90, Ill.

• C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

• THE KIRK & BLUM MFG. CO., 3120 Forrester St., Cincinnati 9, Ohio

LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

• LITTLEFORD BROS., INC., 453 E. Pearl St., Cincinnati 2, Ohio

MECKER ENGINEERING, INC., Dayton Rd., Ottawa, Ill.

RICHARDSON ENGINEERING CO., 700 Hospital St., Richmond, Va.

R. C. STANHOPE, INC., 60 E. 42nd St., New York, N.Y.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

**TESTING LABORATORIES**

(see **Laboratories**)

**TESTING EQUIPMENT** (see **Laboratory Apparatus**)

**THAWING PITS** (for **Frozen R. R. Hopper Cars**)

JOHNSTON MFG. CO., 2825 E. Hennepin Ave., Minneapolis 13, Minn.

**THERMOCOUPLES, Pyrometers** (see **Pyrometers**)

**THICKENERS** (see **Slurry Thickeners**)

**THIRD AXLES** (see **Motor Truck Drives and Differentials**)

**TIRES, Coolers, Dryers, Kiln**

• SINTERING MACHINERY CORP., Netcong, N.J.

F. L. SMITH & CO., 11 West 42nd St., New York 36, N.Y.

STROH PROCESS STEEL CO., 1428 High St. N.S., Pittsburgh 12, Pa.

• TAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

**TIRES AND TUBES, Rubber, Heavy Duty Industrial**

• FIRESTONE TIRE & RUBBER CO., Akron, Ohio

B. F. GOODRICH CO., 500 South Main St., Akron 11, Ohio

• THE GOODYEAR TIRE & RUBBER CO., INC., 1144 E. Market St., Akron 16, Ohio

• GULF OIL CORP., GULF REFINING CO., Gulf Bldg., Pittsburgh 30, Pa.

STAR RUBBER CO., 345 Park Ave. East, Mansfield, Ohio

• UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

**TORCHES, Cutting and Welding** (see **Welding and Cutting Equipment, Oxyacetylene**)

**TORQUE CONVERTERS**

• ALLISON DIV. OF GENERAL MOTORS CORP., 4700 W. 10th St., Indianapolis 6, Ind.

TORCON CORP., 493 E. 5th St., Ashtabula, Ohio

• TRACTOMOTIVE CORP., Dearfield, Ill.

\* A dot before name indicates ROCK PRODUCTS Advertiser

## DIRECTORY

### TOWERS, Structural Steel

THE FAIRFIELD ENGINEERING CO., 234 Barnhart St., Marion, Ohio

### TRACK & TRACK EQUIPMENT

- AMERICAN BRAKE SHOE CO., 230 Park Avenue, New York 17, New York
- ATHEY PRODUCTS CO., 5631 W. 15th St., Chicago 28, Ill.
- BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.
- THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado
- THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 875 Madison Avenue, New York 22, New York
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.
- KENSINGTON STEEL CO., 505 Kensington Ave., Chicago 23, Ill.
- HORDBERG MFG. CO., 3073 S. Chase Ave., Milwaukee 7, Wis.
- UNITED STATES STEEL CORP., 225 William Penn Place, Pittsburgh 30, Pa.

### TRACTORS, Industrial Crawler

- ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin
- ALLIS-CHALMERS MFG. CO., Tractor Division, Milwaukee 1, Wis.
- CATERPILLAR TRACTOR CO., Peoria 8, Ill.
- INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.
- THE OLIVER CORP., 19300 Euclid Ave., Cleveland 17, Ohio
- THE OLIVER CORP., 400 W. Madison St., Chicago 6, Ill.
- RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### TRACTORS, Industrial Wheel

J. I. CASE COMPANY, 700 State Street, Racine, Wis.

### TRAILER BODIES (see Bodies)

### TRAILER BODIES, Bulk Cement (see Bodies)

### TRAILERS & SEMI-TRAILERS, Motor Truck Eqpt.

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- EASTON CAR & CONSTRUCTION CO., Easton, Pa.
- EUCLID DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio
- THE FRUEHAUF TRAILER CO., 1040 Harper Ave., Detroit 32, Mich.
- THE GALLION ALLSTEEL BODY CO., 603 S. Market St., Gallion, Ohio
- LANDIS STEEL CO., 116 West A St., P.O. Box 248, Picher, Okla.
- SCHONROCK EQUIPMENT MFG. CO., Mathis Field, P.O. Box 1543, San Angelo, Texas

### TRAILERS, Cable Dump

- COOK BROS. EQUIPMENT CO., 3334 San Fernando Road, Los Angeles 65, Calif.
- THE MARION METAL PROD. CO., Cheney Ave., Marion, Ohio

SCHONROCK EQUIPMENT MFG. CO., Mathis Field, P.O. Box 1543, San Angelo, Texas

WINCH-LIFT, INC., 503 First National Bank Bldg., Shreveport, La.

### TRAMWAYS, Aerial (see Aerial Tramways)

### TRANSFER PLANTS, Ready-Mixed Concrete

BODINSON MFG. CO., 2401 Bayshore Blvd., San Francisco 24, Calif.

• CONCRETE TRANSPORT MIXER CO., 4980 Fyler Ave., St. Louis 9.

C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

• WORTHINGTON CORP., So. 2nd St., Plainfield, N.J.

### TRANSFORMERS, Electric

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TRANSIT CONCRETE MIXING PLANTS (see Central Mixing Plants)

### TRANSMISSION MACHINERY (see Gears)

### TRIPPERS, Belt (see Conveyor Belt Trippers)

### TROLLEYS, I-Beam

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

• JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.

WHITING CORP., Harvey, Ill.

THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Holdeman Ave., Philadelphia 15, Pa.

### TRUCK BODIES (see Bodies)

### TRUCKS, Dump (see Motor Trucks)

### TRUCKS, Hand

THE AMERICAN PULLEY CO., 4200 Wissahickon Ave., Philadelphia 29, Pa.

CLARK EQUIPMENT COMPANY, Industrial Truck Division, Battle Creek 60, Michigan

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

EASTON CAR & CONSTRUCTION CO., Easton, Pa.

THE HOWE SCALE CO., Etna, Pa.

THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Holdeman Ave., Philadelphia 15, Pa.

### TRUCKS, Lift (see Lift Trucks)

### TRUCKS, Straddle

CLARK EQUIPMENT CO., Construction Machinery Div., Springfield Place, Battle Creek 60, Mich.

• A dot before name indicates ROCK PRODUCTS Advertiser

### TRUCKS AND TRACTORS, Wheeled Industrial

1. Electric

2. Gas

• ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

2

BAKER-RAULANG CO., West 80th St., Cleveland, Ohio

1—3

• THE BUDA COMPANY, 154th & Commercial, Harvey, Illinois

2

CLARK EQUIPMENT COMPANY, Industrial Truck Division, Battle Creek 60, Michigan

2

EASTON CAR & CONSTRUCTION CO., Easton, Pa.

1

GERLINGER CARRIER CO., Dallas, Ore.

2

• THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.

2

• TRUCK-MAN DIV., THE KNICKERBOCKER CO., 603 Liberty St., Jackson, Mich.

2

LESSMAN MFG. CO., E. 20 and Easton Blvd., Des Moines 4, Iowa

2

INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill.

2

LIFT TRUCKS, INC., 2425 Spring Grove Ave., Cincinnati 14, Ohio

1

MOBILIFT CORP., 835 S.E. Main St., Portland 14, Ore.

2

THE YALE & TOWNE MFG. CO., Roosevelt Blvd. & Holdeman Ave., Philadelphia 15, Pa.

1—2

### TRUCKS, Motor (see Motor Trucks)

### TURBINES, Steam

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

EASTON CAR & CONSTRUCTION CO., Easton, Pa.

• THE EUCLID DIV., GENERAL MOTORS CORP., 1361 Chardon Road, Cleveland 17, Ohio

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TURBINES, Water

• ALLIS-CHALMERS MFG. CO., 975 So. 70th St., Milwaukee 1, Wis.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

### TURNTABLES, Track

CHASE FOUNDRY & MANUFACTURING CO., Columbus, Ohio

EASTON CAR & CONSTRUCTION CO., Easton, Pa.

L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.

HARDINGE CO., INC., 240 Arch St., York, Pa.

MOORE DRY KILN CO., 1220 W. State St., Jacksonville 1, Fla.

STEARS MFG. CO., INC., 600 E. Beecher, Adrian, Mich.

### U

### UNLOADERS, Boat

BRAVOCORP., Drive Bldg., Fifth & Liberty Aves., Pittsburgh 22, Pa.

HEWITT-ROBINS, INC., 566 Glenbrook Road, Stamford, Conn.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

WELLMAN ENGINEERING CO., 7000 Central Ave., Cleveland 4, Ohio

### UNLOADERS, Box Car

BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Illinois BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio

BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.

THE FRANK G. HOUGH CO., 939 Sunnyside Ave., Libertyville, Ill.

C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

LINK-BELT COMPANY, 307 N. Michigan Ave., Chicago 1, Ill.

LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

WEBSTER MFG. CO., West Hall St., Tiffin, Ohio

### UNLOADERS, Pneumatic

FULLER CO., 128 Bridge St., Cattaraugua, Pa.

GARDNER-DENVER CO., Quincy, Ill.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

ARTHUR REHSBERGER & SON, INC., 320 Ferry St., Newark 5, N.J.

SPROUT, WALDRON & CO., INC., Munsey, Pa.

RICHARD P. WALSH CO., 30 Church St., New York, N.Y.

### UNLOADERS, Hooper Car

BARBER-GREEN CO., 400 N. Highland Ave., Aurora, Ill.

BAUGHMAN MFG. CO., INC., Shipman Road, Jerseyville, Ill.

BONDED SCALE AND MACHINE CO., 2193 S. Third St., Columbus 7, Ohio

BUTLER BIN CO., 945 Blackstone Avenue, Waukesha, Wis.

CONCRETE TRANSPORT MIXER CO., 4985 Fyler Ave., St. Louis 9, Mo.

FULLER CO., 128 Bridge St., Cattaraugua, Pa.

C. S. JOHNSON CO., P. O. Box 71, Champaign, Ill.

KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

LIPPMANN ENGINEERING WORKS, 4603 W. Mitchell St., Milwaukee 14, Wis.

MATERIAL HANDLING INC., 4985 Fyler Ave., St. Louis 9, Mo.

• THE OLIVER CORP., A. B. FARQUHAR DIV., 142 N. Duke St., York, Pa.

### UNLOADERS, Block

BUILDERS EQUIPMENT COMPANY, 4012 N. Central Avenue, Phoenix, Arizona

### V

### VALVES, Air

DIXON VALVE & COUPLING CO., Hancock St. & Columbia Ave., Philadelphia 22, Pa.

HOSE ACCESSORIES CO., Lehigh Ave. at 17th St., Philadelphia 32, Pa.

## DIRECTORY

### VALVES, Automatic

- EAGLE IRON WORKS, 137 Holcomb Ave., Des Moines 4, Iowa
- THE FOXBORO CO., 38 Neponset Ave., Foxboro, Mass.
- R. E. LOVEKIN CORP., Schaff Building, 15th & Race Sts., Philadelphia 2, Pa.

### VALVES, Bin

BEAUMONT BIRCH COMPANY, 1505 Race Street, Philadelphia 2, Penn.

• BUELL ENGINEERING CO., 70 Pine Street, New York 5, N.Y.

• CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.

THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

• FULLER CO., 128 Bridge St., Catsuquio, Pa.

THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

• LINK-BELT CO., 307 N. Michigan Ave., Chicago 1, Ill.

MATERIAL HANDLING INC., 4985 Flyer Ave., St. Louis 9, Mo.

STEPHENS-ADAMSON MFG. CO., Ridgeway Ave., Aurora, Ill.

### VALVES, Slurry

• FULLER CO., 128 Bridge St., Catsuquio, Pa.

• THE MINE & SMELTER SUPPLY CO., 17th & Blake, Denver 17, Colo.

### VALVES, Water

• E-PAC VALVE DIV., American Chain & Cable Co., Inc., Reading Pa.

DIXON VALVE & COUPLING CO., Hancock St. & Columbia Ave., Philadelphia 22, Pa.

### VENTILATORS, Powered, Roof

• THE KIRK & BLUM MFG. CO., 3210 Ferrer St., Cincinnati 9, Ohio

### VIBRATING SCREENS (see Screens, Vibrating)

### VIBRATING TABLES

• KIRK & BLUM MFG. CO., 3210 Ferrer St., Cincinnati 9, Ohio

### VIBRATORS for Chutes, Bins, etc.

• THE BIN-DICATOR COMPANY, 12946 Kercheval Avenue, Detroit 15, Michigan

• THE BRADFORD COMPANY, 145 Chestnut Street, New Haven, Conn.

• THE CLEVELAND VIBRATOR CO., 2828 Clinton Ave., Cleveland 13, Ohio

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

JEFFREY MANUFACTURING CO., 935 North 4th St., Columbus 16, Ohio

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

MARTIN ENGINEERING CO., 704 Rock Place, Keweenaw, Ill.

SPO, INC., 6556 Grand Division Ave., Cleveland 25, Ohio

• SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa.

• THE W. S. TYLER CO., 3615 Superior Ave., Cleveland 14, Ohio

VIBOR CO., 726 South Flower St., Burbank, Calif.

VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y.

### VIBRATORS, Concrete Block

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Avenue, Columbus 12, Ohio

• BERGEN MACHINE & TOOL CO., INC., 189 Franklin Avenue, Nutley 10, New Jersey

• THE BRADFORD COMPANY, 145 Chestnut Street, New Haven, Conn.

• THE CLEVELAND VIBRATOR CO., 2828 Clinton Avenue, Cleveland 13, Ohio

• COLUMBIA MACHINE WORKS, 107 South Grand, Vancouver, Washington

• CONCRETE TRANSPORT MIXER CO., 4985 Flyer Ave., St. Louis 9, Mo.

• FLEMING MFG. CO., Dept. C, Fleming Ave., Cuba, Mo.

F. C. GEORGE MACHINE CO., INC., 100 S. Westmoreland Drive, Orlando, Fla.

• KIRK & BLUM MFG. CO., 3210 Ferrer St., Cincinnati 9, Ohio

MULTIPLEX MACHINERY CO., Div. of Multipack, Inc., Fremont St., Elmore, Ohio

• OSWALT ENGINEERING SERVICE, 1335 Circle Ave., Forest Park, Ill.

• SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa.

VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y.

### VIBRATORS, Portable, Concrete

• THE BRADFORD COMPANY, 145 Chestnut Street, New Haven, Conn.

• CHICAGO PNEUMATIC TOOL CO., 6 East 44th St., New York 17, N.Y.

• THE CLEVELAND VIBRATOR CO., 2828 Clinton Ave., Cleveland 13, Ohio

• SYNTRON COMPANY, 450 Lexington Ave., Homer City, Pa.

THOR POWER TOOL CO., 175 N. State St., Aurora, Ill.

VIBRO-PLUS PRODUCTS, INC., 54-11 Queens Blvd., Woodside 77, N.Y.

### VOLTMETERS

• GENERAL ELECTRIC CO., 1 River Road, Schenectady 5, N.Y.

### W

### WAGONS, Dump

• ALLIS-CHALMERS MFG. CO., 975 South 70th Street, Milwaukee 1, Wisconsin

• ALLIS-CHALMERS MFG. CO., Tractor Division, Milwaukee 1, Wis.

ATHENY PRODUCTS CO., 5331 W. 65th St., Chicago 28, Ill.

• CATERPILLAR TRACTOR CO., Peoria 8, Ill.

EUCLID DIV., GENERAL MOTORS CORP., 1361 Clarendon Road, Cleveland 17, Ohio

LANDIS STEEL CO., 116 West A St., P.O. Box 248, Fisher, Okla.

WOOLDRIDGE MFG. CO., Hendy Ave., Sunnyvale, Calif.

### WALL TIES (new classification)

ADRIAN PEERLESS, INC., 1401 East Michigan St., Adrian, Mich.

CARTER-WATERS CORP., 2400 Fenway, Kansas City, Mo.

CEDAR RAPIDS BLOCK CO., Cedar Rapids, Iowa

### WASHERS, Sand, Gravel, Stone (see Scrubbers)

### WEIGH LORRIES

ANCHOR CONCRETE MACHINERY CO., 1191 Fairview Ave., Columbus 12, Ohio

BEAUMONT BIRCH CO., 1505 Race St., Philadelphia 2, Pa.

• BUTLER BIN CO., 945 Blackstone Ave., Waukesha, Wis.

• CHAIN BELT COMPANY, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

THE FAIRFIELD ENGINEERING CO., 324 Barnhart St., Marion, Ohio

FANNING SCHUETT ENGINEERING CO., 4325 N. Third Street, Philadelphia 40, Pa.

THE HOWE SCALE CO., Rutland, Vt.

• THE JEFFREY MFG. CO., 935 N. Fourth St., Columbus 16, Ohio

STREETER-AMET CO., 4101 N. Ravenswood Ave., Chicago 13, Ill.

## DIRECTORY

• HARNISCHFEGER CORP., 4400 W. National Ave., Milwaukee 46, Wis.

JACKSON PRODUCTS INC., 31739 Mount Penn, Warren, Mich.

LINCOLN ELECTRIC CO., 22801 St. Clair Ave., Cleveland 17, Ohio

METAL & THIMBIE CORP., 100 E. 42nd St., New York 17, N.Y.

• SIGHT FEED GENERATOR CO., 83 East 2nd St., W. Alexandria, Ohio

• STOODY CO., Whittier, Calif.

• VICTOR EQUIPMENT CO., 844 Palms St., San Francisco 7, Calif.

WESTINGHOUSE ELECTRIC CORP., Gateway Bldg., Pittsburgh 30, Pa.

WILLSON PRODUCTS INC., Read-  
ing, Pa.

**WET PANS, Grinding** (see  
Pans, Grinding)

### WHEELS, Abrasive

• BAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., 61 Willett St., Passaic, N.J.

SIMMONS ABRASIVE CO., Taxcoy & Fraley Sts., Philadelphia 37, Pa.

STEELING GRINDING WHEEL CO., Tiffin, Ohio

• UNITED STATES RUBBER CO., 1230 Ave. of the Americas, New York 20, N.Y.

### WHEELS, Tracklaying Type

STROH PROCESS STEEL CO., 1428 High St. N.E., Pittsburgh 12, Pa.

### WHIRLEYS

AMERICAN HOIST & DERRICK CO., 63 S. Robert St., St. Paul 1, Minn.

RICHARD F. WALSH CO., 30 Church St., New York, N.Y.

### WINCHES (see Capstans)

### WIRE & CABLE, Electric (see Cable, Electric)

### WIRE CLOTH

BACON-PIETSCH CO., INC., 75 North Maple Avenue, Ridgewood, New Jersey

• THE CLEVELAND WIRE CLOTH & MFG. CO., 3573 East 79th St., Cleveland 3, Ohio

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

HEWITT-ROBINS, INC., 666 Glenbrook Road, Stamford, Conn.

• IOWA MFG. CO., 916-16th St. N.E., Cedar Rapids, Iowa

• KENNEDY-VAN SAUN MFG. & ENG. CORP., 2 Park Ave., New York 16, New York

• LUDLOW-SAYLOR WIRE CLOTH COMPANY, 624 S. Newstead Ave., St. Louis 10, Mo.

• NATIONAL WIRE CLOTH CO., 252 Fairfield Ave., St. Paul, Minn.

• COLORADO FUEL & IRON CORP., Pacific Coast Div., 1080 19th Ave., Oakland 6, Calif.

• SIMPLICITY ENGINEERING CO., 213 S. Oak St., Durand, Mich.

• SMITH ENGINEERING WORKS, 532 E. Capitol Dr., Milwaukee 12, Wis.

SEPARATOR DIV., SOUTHWESTERN ENGINEERING CO., 4800 S. Santa Fe Ave., Los Angeles 58, Calif.

STANDARD STAMPING & PERFORATING CO., 3131 West 49th Place, Chicago 22, Ill.

• TWIN CITY IRON & WIRE CO., 23 W. Water, St. Paul, Minn.

• THE W. S. TYLER CO., 3615 Superior Ave., Cleveland 14, Ohio

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 23, New York

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 23, New York

ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.

L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.

• JONES & LAUGHLIN STEEL CORP., 3 Gateway Center, Pittsburgh 30, Pa.

THE THOMAS LAUGHLIN CO., 143 Fore Street, Portland 6, Maine

LESCHEN WIRE ROPE DIV., 5909 Kennerly Ave., St. Louis 12, Mo.

• MACWHYTE COMPANY, 2949-14th Ave., Kenosha, Wis.

MADESCO TACKLE BLOCK CO., P.O. Box 148, Easton, Pa.

PELL CABLE CUTTER CO., 55 New Montgomery St., Room 220, San Francisco 5, Calif.

JOHN A. ROEBLING'S SONS CORP., 640 S. Broad St., Trenton 2, N.J.

• JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.

SANDERSON-CYCLONE DRILL CO., 157 S. Main St., Orrville, Ohio

• SAUERMAN BROS., INC., 530 S. Clinton St., Chicago 7, Ill.

• TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N.J.

• AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 13, Ohio

### WIRE ROPE

• CABLE/HAZARD DIVISIONS, AMERICAN CHAIN & CABLE CO., INC., Wilkes-Barre, Penn.

BERGEN WIRE ROPE CO., Edin, N.J.

BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.

RODERICK & BASCOM ROPE CO., 4203 Union Blvd., St. Louis 15, Mo.

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.

L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.

• JONES & LAUGHLIN STEEL CORP., 3 Gateway Center, Pittsburgh 30, Pa.

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 23, New York

LESCHEN WIRE ROPE DIV., 5909 Kennerly Ave., St. Louis 12, Mo.

• LE TOURENAU-WESTINGHOUSE CO., 2301 N. Adams St., Peoria 3, Ill.

• MACWHYTE COMPANY, 2949-14th Ave., Kenosha, Wis.

• JOHN A. ROEBLING'S SONS CORP., 640 S. Broad St., Trenton 2, N.J.

• JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.

• SAUERMAN BROS., INC., 530 S. Clinton St., Chicago 7, Ill.

• AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP., 614 Superior Ave., N.W., Rockefeller Bldg., Cleveland 13, Ohio

• COLUMBIA-GENEVA STEEL DIV., UNITED STATES STEEL CORP., 1403 Russ Bldg., San Francisco 6, Calif.

• UNION WIRE ROPE CORP., 21st & Manchester Ave., Kansas City 26, Mo.

### WIRE ROPE DRESSING COMPOUNDS (see Lubricants)

### WIRE ROPE, Slings

CABLE/HAZARD DIVISIONS, AMERICAN CHAIN & CABLE CO., INC., Wilkes-Barre, Penn.

BETHLEHEM STEEL CO., Third St., Bethlehem, Pa.

RODERICK & BASCOM ROPE CO., 4203 Union Blvd., St. Louis 15, Mo.

• THE COLORADO FUEL AND IRON CORP., Continental Oil Building, Denver 2, Colorado

• THE COLORADO FUEL AND IRON CORP., Wickwire Spencer Steel Division, 575 Madison Avenue, New York 23, New York

ELECTRIC STEEL FOUNDRY CO., 2141 N.W. 25th Ave., Portland 10, Ore.

L. B. FOSTER CO., P.O. Box 1647, Pittsburgh 30, Pa.

• JONES & LAUGHLIN STEEL CORP., 3 Gateway Center, Pittsburgh 30, Pa.

LESCHEN WIRE ROPE DIV., 5909 Kennerly Ave., St. Louis 12, Mo.

• MACWHYTE COMPANY, 2949-14th Ave., Kenosha, Wis.

• JOHN A. ROEBLING'S SONS CORP., 640 S. Broad St., Trenton 2, N.J.

• JOSEPH T. RYERSON & SON, INC., P.O. Box 8000-A, Chicago 80, Ill.

• UNION WIRE ROPE CORP., 21st & Manchester Ave., Kansas City 26, Mo.

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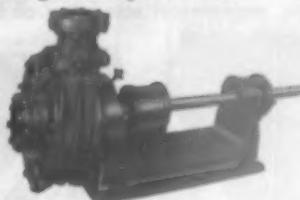
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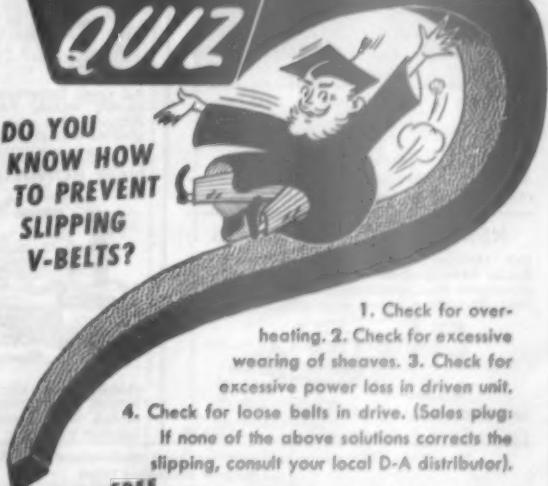
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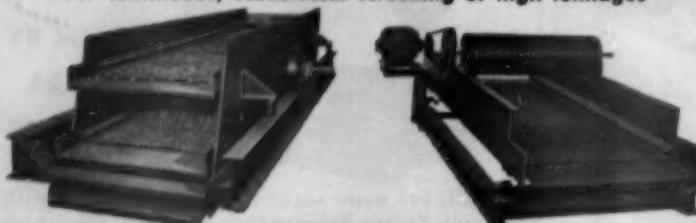
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# Tough and versatile No. 80 Scraper moves "pay dirt"

# FAST



THIS matched combination of CAT\* D8 Tractor and No. 80 Scraper is building a levee along Alameda creek, near Centerville, Calif., preparatory to stripping pit run sand and gravel. It is one of two Caterpillar rigs owned by Rhodes and Jamieson, Ltd., of Centerville. Nothing is wasted on this operation. The rich overburden—from what was 100 acres of farmland—is sold locally as top-soil. Here are some of the ways in which the No. 80 Scraper contributes to the operation's efficiency:

**Versatility**—This one unit can both strip and haul. It can make hairpin turns in tight quarters with its rugged ball-and-socket hitch. And with its freedom from overhead clutter, the No. 80 is an easy target for shovel loading.

**Long work life**—The Caterpillar No. 80 is designed to stand up to equipment-busting work around rock and frozen materials. Cutting edges are tough carbon steel, "Hi-Electro" hardened and reversible for even longer work life.

**Fast cycle times**—Bowl and apron design assure a boiling action for fast, full loads. (Capacity of the No. 80 is 20 heaped yards, 23 yards with sideboards.) Ejection is fast and positive, even with sticky materials. Its responsive controls are vital for "pump" loading dead materials like sand. The ground-hugging No. 80 Scraper carries

60% of the load on its rear wheels for maximum stability on slopes and in rough going. Its oversize tires stay "on top," even in wet sand.

D. A. Gildersleeve, plant manager of Rhodes and Jamieson, particularly likes the loading ability of Cat Scrapers, the availability of Caterpillar parts. Why not ask your Caterpillar Dealer for on-the-job proof that a Cat Scraper can cut costs on *your* operation? You can count on your dealer for skilled service and a complete stock of genuine Caterpillar parts.

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